DYNACOMP

Catalog No. 25

OUR APOLOGIES!!!

DYNACOMP catalogs are normally printed on quality offset or coated paper. However, because of current paper shortages, the first 40 tons of this edition are being printed on newspaper stock.

Quality Software for Microsystems

- ALTOS
- APPLE II
- ATARI
- CANON AS-100
- COMMODORE
- COMPAQ
- 8" CP/M
- HEATH Z-100
- IBM PC
- KAYPRO
- MORROW
- NEC PC-8000
- NORTH STAR
- OSBORNE
- SUPERBRAIN
- TRS-80
- CASSETTE
- 16K
- 24K
- 32K
- 48K
- DISKETTE

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WELCOME TO DYNACOMP

Dear Reader,

Welcome to the twenty-fifth edition of the DYNACOMP catalog. This booklet was printed on the fifth anniversary of the founding of DYNACOMP, and is the most comprehensive sales release we have ever distributed.

DYNACOMP publishes more software than any other company in the world. This catalog, for example, contains over 200 different titles. When you factor in the various machines and formats supported, the DYNACOMP product line exceeds 2,000 items.

We emphasize the term *publish* because it has special meaning. There are basically four levels in the hierarchy of software distribution:

1. The publisher, or originator of the software product
2. The distributor
3. The dealer
4. The individual user

Usually the publisher produces the software and delivers it (at a large volume discount) to one or more distributors. These distributors in turn sell the product (again at a discount) to dealers (for example, stores). The dealer then sells to the individual user (you).

DYNACOMP is a publisher. Our software is written by either in-house or contract programmers. However, while we sell to distributors, we also support direct sales to over 1,000 computer stores and other dealers around the world. In addition, DYNACOMP operates a highly responsive (most orders shipped within 48 hours) mail order organization which deals directly with the individual user.

What this means to the mail order customer is simple:

1. **Low prices:** By selling directly to the user, two levels of discounting are skipped. DYNACOMP can therefore afford to have lower list prices and even give a sizeable discount! See the order form at the back of this catalog.
2. **Rapid delivery:** Most dealers and distributors (and especially the mail order discount houses advertised in the magazines) do not maintain very large stocks. However, DYNACOMP *must* keep a full inventory because, as the publisher, we are the source! When you purchase directly from DYNACOMP, there's *very* seldom a delay in filling your order.
3. **Technical support:** We know more about our software than any distributor or dealer. Usually our technical staff can answer questions on the spot. If not, we'll find some way to help.

All this sounds fine on paper, but what really makes DYNACOMP work well is automation, organization and employees:

1. Orders and catalog requests are quickly processed by four very reliable computers. We currently maintain a mail list of over 250,000 names. Orders are sent by first class mail or UPS. Catalogs are sent (according to zip code) by bulk mail.
2. The people in the order department are trained to take all the information needed for filling your order. The invoice is rapidly prepared and goes directly to the shipping section. The production group has the responsibility to constantly monitor and maintain the shipping section's inventory.
3. Our staff contains a blend of talents. For example, the manager who oversees the order department is a veteran Kodak supervisor. The head of our technical support group is a former Xerox scientist (and author of the two volume set, BASIC SCIENTIFIC SUBROUTINES, published by McGraw/Hill). And so on.

All this adds up to the following fact: There are more than 50,000 satisfied DYNACOMP customers, and a large fraction of them have purchased twice or more. We hope that you will be a frequent DYNACOMP patron.

HERE'S WHAT DYNACOMP'S CUSTOMERS SAY ABOUT OUR PRODUCTS AND SERVICES

From a first-time customer . . . .

"I was very impressed by your prompt service and the quality of your product. It is nice to see that a mail order company can be both reputable and efficient."

Dr. A.R.B., Madison, Wisconsin
Personal Finance System, Osborne

From returned registration cards . . . .

"Excellent. My 3½ year old really enjoys it!"

B. Y., Kendall Park, New Jersey
Hodge Podge, Apple

"Fantastic."

P.W.S., Boulder, Colorado
Children's Carrousel, Apple

From a repeat customer . . . .

"I received the blank disks and Personal Finance System yesterday afternoon. As in the past, I was pleased with the products and with the rapid, accurate service."

A.R.W., Norfolk, Virginia

And from a customer with a problem . . . .

"The replacement BRIDGE MASTER disk has been received. Your service is excellent and superior to other mail order houses! Please feel free to use this statement at any time."

R.C. Meaders, Camarillo, California

COMPUTERS AND REQUIREMENTS

ALTOS	CP/M and MBASIC (8" drive version only)
Apple II:	16K Applesoft BASIC, DOS 3.2 or 3.3 (state which)
Atari 400/800:*	Atari BASIC cartridge, 16K/24K
CANON AS-100	MS DOS and MBASIC
Cromemco	CDOS and BASIC (8" drive version only)
8" CP/M	Required: IBM 3740 disk format compatibility. Also required: MBASIC (except for EBASIC, DATA RETRIEVAL SYSTEM, CRANSTON MANOR, DYNAFORTH and IRON CLADS, which require only CP/M.)
Heath/Zenith Z-89	CP/M and MBASIC (8" drive version only)
HEATH ZENITH Z-100	ZDOS and ZBASIC
IBM PC	PC DOS or MSDOS, and BASIC
KAYPRO II	CP/M and MBASIC
MORROW DESIGNS I, II, III	CP/M and MBASIC
NEC PC 8000	NBASIC or MBASIC (state which)
North Star:	5¼" Diskette, North Star DOS and BASIC and 16K of free memory or CP/M, MBASIC and 16K of free memory
Osborne	CP/M and MBASIC
PET/CBM:**	16K Commodore BASIC
Super Brain/Compustar	CP/M and MBASIC
TRS-80:***	16K Level II BASIC, Model I, III, or IV.
XEROX 820/820 II	CP/M and MBASIC (8" drive version only)

* Most Atari programs require 24K. Those that will run in 16K are so marked in the catalog

** PET/CBM diskettes come in 4040 (2040) and C-64 format. They cannot be loaded on 8050 disk drives.

*** TRS-80 diskettes do not come with TRSDOS or BASIC on them.
All TRS-80 programs will run on the Model III and IV with the exception of TIDY, GRAFIX, CRIBBAGE and CHESSMASTER. Model I to Model III conversion program is required for diskettes.

ALTOS, Apple, Atari, CANON, CP/M, Cromemco, Heath, IBM, KAYPRO, MBASIC, MORROW, NBASIC, NEC, North Star, Osborne, PC-8000, PET/CBM, SuperBrain, TRS-80, XEROX, and Zenith are tradenames and/or trademarks.

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(716) 442-8731 (24-hour order and message phone)
(716) 442-8960 (office phone: 9 - 5 EST)
(800) 828-6772 (toll-free order phone)

AVAILABILITY AND PRICES

WHICH COMPUTER?

DYNACOMP distributes programs for all of the computers and systems listed on the facing page. However, not all programs run on all computers. To avoid confusion, we have chosen a consistent way of indicating which runs on what. This information accompanies the description of each program, and is also shown in the availability tables.

Beneath the title of each program description is a simple caption having one of four forms:

1. "X, Y and Z only"
2. "available for all computers"
3. "available for all computers except X, Y and Z"
4. "CP/M only"

The meaning of the first form is self-evident. The second one means all of the computers listed on the page. The third form means all of those computers except "X, Y and Z". The fourth notation ("CP/M only") is a shorthand for the following

CP/M = Osborne, North Star CP/M, SuperBrain, NEC PC 8000 CP/M, KAYPRO II, MORROW DESIGNS, HEATH ZENITH Z-100, HEATH ZENITH H-89 8" CP/M, CROMEMCO, ALTOS, XEROX 820, and other CP/M IBM 3740 systems.

Except for the programs listed on the facing page, "CP/M only" also means that Microsoft BASIC must be loaded.

WHICH CP/M?

DYNACOMP's CP/M-Microsoft BASIC programs are compatible with CP/M single density versions 1.4, 2.2, and MP/M, and with Microsoft BASIC versions 4.51 (and older), 5.2 and the BASIC-80 interpreter. No special printer or screen graphics capabilities are required.

SINGLE DENSITY/DOUBLE DENSITY

DYNACOMP recommends that if your computer accepts both single and double density diskettes, you should order the software you want in the single density format and later convert it to double density. If you want double density, add $3.00 to the diskette price shown in the program description.

The exceptions to this recommendation are the North Star Advantage and Osborne-1 double density model. The North Star Advantage will simply not read single density disks. The Osborne-1 double density system does, but with perhaps 90% reliability. We *strongly* recommend that double density disks be ordered for both of these machines.

HOW MUCH MEMORY IS REQUIRED?

A point of possible confusion is how much memory is required to run a particular program. Unless otherwise stated, all of DYNACOMP's programs will run in "16K of program memory" for all machines "except the Atari which requires 24K." (Several of DYNACOMP's Atari programs will run in 16K and are so marked.) This means that for an Apple II Plus disk system, 32K is required (so that at least 16K of memory is available after the disk-operating system is loaded). For a CP/M system, the 16K refers to how much memory is free for use after BASIC has been loaded.

AND THEN THERE IS THE COMMODORE

PET/CBM programs are available on both cassette and diskette. However, the diskette versions can be loaded only using 2040, 4040, and Commodore 64 disk drives. For those having 8050 drives (or wishing to save money), the cassette versions may be loaded and saved on diskette.

PACKAGE PRICES

There are several groups of software packages which naturally form sets. Examples include the three Fourier analysis programs, the three regression programs, volumes I and II of BASIC SCIENTIFIC SUBROUTINES, the NSSE library and others. DYNACOMP offers each of these groups at a reduced package price. These reduced price packages *DO NOT* count toward the 10% and 20% quantity discounts indicated on the order form.

EDUCATION

HODGE PODGE

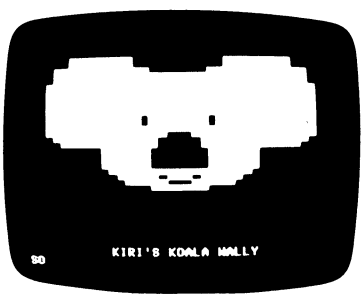
(Apple, TRS-80, and Atari only)

HODGE PODGE is a computer "happening" for children from ages 18 months to seven years and older. It is a surreptitious learning device which provides knowledge in a most enjoyable (and non-intimidating) fashion. The program consists of many cartoons, animations, and songs which appear when any key on the computer is pressed. Each key provides something different for the child to explore, from **A**pples to **Z**igzags. With an adult present the child can be told about magnets, numbers, musical notes, animals, up and down, color, and much, much more. When alone the child will be kept endlessly amused by the color, sound, and wonderful pictures displayd by HODGE PODGE. This program is a must for any family containing children and a suitable computer. Note: the TRS-80 version does not have the sound feature of the Atari and Apple versions. Apple and TRS-80 versions require 48K; Atari cassette version requires 32K, diskette version requires 48K.

See the reviews in *Softalk* and *Infoworld*.

Price: $14.95 Cassette
$18.95 Diskette

Sample display (Apple):



CHILDREN'S CARROUSEL

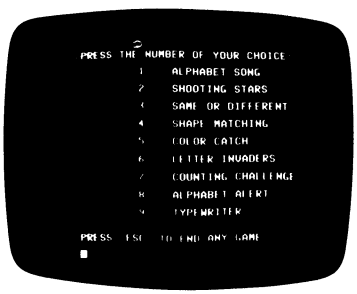
(Apple 48K diskette only)

DYNACOMP's HODGE PODGE was such a great success that we decided to produce another package aimed at the pre-school child, CHILDREN'S CARROUSEL.

CHILDREN'S CARROUSEL is composed of nine menu-selected games which have great color and sound (including the carrousel and alphabet songs). The games include matching shapes, counting, letter recognition and more. It has been "field tested" with many children. We are very proud of this one!

Price: $19.95 Diskette

Sample display:



CHILDREN'S CARROUSEL is a great present for a young child, and may soon outsell even DYNACOMP's HODGE PODGE!

RUBIK'S CUBE SOLVER

(TRS-80 and PET only)

Solving the Rubik's cube puzzle is an exercise in algorithimic logic, and is a "natural" for computer calculation. The RUBIK'S CUBE SOLVER permits you to input the starting state of the 24 facing elements of the cube. It then solves the problem one step at a time, with each step shown as a unfolded view of the cube. Can you solve the cube in fewer steps. In any case, it sure beats disassembling the cube or peeling off and replacing the colors!

Requires 16K.

Price: $14.95 Cassette
$18.95 Diskette
$21.45 Disk

BOTANY FRUIT KEY

(Atari diskette only)

BOTANY FRUIT KEY is an exciting and new approach to identifing common fruits on the Atari computer. You answer the easy to follow questions about the fruit you have just picked off the back yard tree. This program identifies apples, pears, crabapples, maples, elms and many many more ... 125 trees and shrubs in all. You learn how a botanist identifies plants by their anatomy. You learn the common name and the name scientists call them by. And if you get stuck, there's an easy to use glossary. The glossary contains dozens of technical terms, making them fun to learn.

Imagine the world of discovery opened to you when you use this clever computer assisted learning tool. Certainly no classroom should be without it!!! Requires 24K.

Price: $19.95 Diskette

HINT

(TRS-80 cassettes)

After you load a TRS-80 BASIC program from tape, LIST it. If "garbage" appears in the listing, it was a bad load. Try again with a different volume level on the cassette deck.

ENDORSEMENT:

HODGE PODGE has recently been "strongly endorsed" in the book "Teach: Achieving Equity and Excellence in Schools," by Joe Nathan (Pilgrim Press).

PLAYER PIANO

(32K Atari cassette and diskette only)

Now you can turn your Atari into a player piano. In the creation mode the Atari keyboard is turned into a 20 key piano scale. You may generate tunes having as many as 400 notes composed of whole, half, quarter or eighths, and having a variety of tempos. The tune may then be saved for later editing and/or replay. You may play any segment of the tune, and display the notes on the screen for analysis and modification. PLAYER PIANO comes with sample tunes and a 15 page manual. PLAYER PIANO is an excellent program available at a very low price,

Price: $15.95 Cassette
$19.95 Diskette

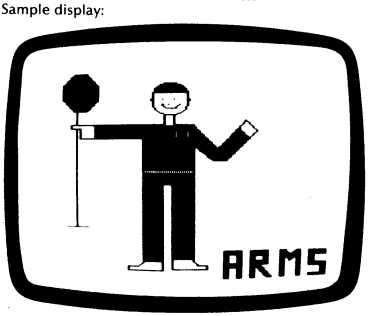
NOTE: PLAYER PIANO is also distributed through ATARI's APX, but at a much higher price.

BODY BASICS

(Atari only)

BODY BASICS is so simple to use that your child can have fun while learning independently! Pictures of people and animals with brightly colored body parts appear on the screen with sound and music. One body part is clearly identified in each picture. The printed name and the body part are in the same color. Through this method of association it is easy for your child to learn the names, locations, sizes, and shapes as well as actions and uses of the body parts. BODY BASICS also develops eye-hand coordination, awareness of music through children's tunes, and reading fundamentals.

Requires 48K, disk drive, and one joystick.
Price: $18.95 Diskette
Sample display:



TEACHER'S GRADEBOOK

(Apple and Atari only)

For each class in their master file, users of TEACHER'S GRADEBOOK can store, retrieve, summarize, update or otherwise manipulate and report extensive data pertaining to class administration, student rosters, grades, and absences. To evaluate the performance of students, up to seven distinct grade categories may be declared and labelled for each class individually, and as many as 20 marks may be entered for each of those grade categories. A separate file of absence records may also be maintained.

User applications vary considerably so it is impossible to specify precisely how many records can be stored on any one data diskette. For example, given the maximum number of possible users on a single diskette (9), a diskette would most likely be eventually filled by the data pertaining to two classes of 35 students (each) for each user. On the other hand, given three classes of 30 students each for each user, one data diskette should accommodate five users; or given only one user, a diskette will probably accommodate up to 15 small classes or five very large classes of 90 students each.

TEACHER'S GRADEBOOK contains many features, including password protection, easy data entry and retrieval, versatile record structure, and much more.

TEACHER'S GRADEBOOK may be used with either one or two disk drives, though two are recommended. Minimum RAM required is 48K. Printer output is optional. It is never too soon or too late to automate your class record keeping.

Price: $49.95 Diskette

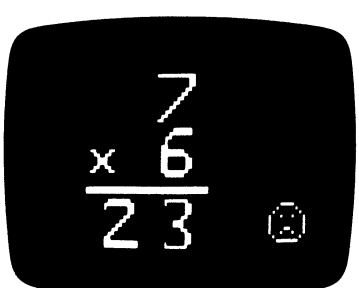
MATH WHIZ QUIZ

(Atari only)

MATH WHIZ QUIZ is a series of lessons in math for preschool through grade school children. Sounds and graphics are used in counting and elementary addition and subtraction exercises. The user can easily choose the difficulty of the lessons which progress through 12 levels up to multiplication and division. Correct and incorrect answers are clearly indicated with graphics displays. Problems are repeated until the student either supplies the correct answer or requests the Atari to provide the answer.

Requires 16K (Cassette), 24K (Diskette).

Price: $13.95 Cassette
$17.95 Diskette
Sample display:



FROG MASTER

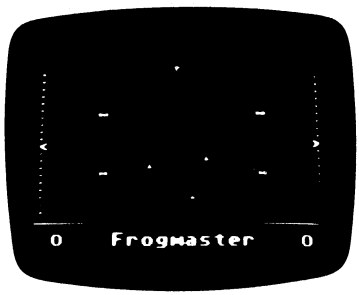
(Atari only)

FROG MASTER contains exciting arcade features in addition to being a highly educational program. It is a fast-moving, high-concentration game for 1 to 4 players. You score by making touchdowns on the opponents' goal line — if his goalie doesn't get there first. But your players (tadpoles and frogs) must be trained. This is accomplished by giving them a reward at just the right moment when they do something right. This takes precise timing and judgement. Your critters must penetrate barriers and avoid evil line backs if they are to score. Many will fall by the wayside, but some will get through. As they learn you can look inside their heads to see how they think. As you reward them, they reward you (the "thought processes" simulated demonstrate the basic type of animal learning — operant conditioning — widely studied in high school and college courses). As you teach them they teach you how learning takes place! Great graphics!

Runs in 16K.
Requires two joysticks.

Price: $17.95 Cassette
$21.95 Diskette

Sample display:



NEWS FLASH! FROGMASTER won the $2,000 award in ATARI's APX contest!

SPELL IT

(Apple 48K Diskette only)

SPELL IT is a spelling quiz system which uses words that you select from 2,000 diskette entries. You can easily make up your own ten-word quizzes and save them on file. SPELL IT can be used at home, in the classroom, in libraries and in business to help children, students, and workers learn correct spelling in an entertaining way. People of all ages enjoy "playing" SPELL IT. They like being able to set their own pace and like the satisfaction which comes from successfully meeting a challenge.

A typical application might be the following. A quiz is selected from the diskette files. When the student is ready, the screen displays the list of words in the quiz. Each quiz word then briefly appears at the center of the screen. The student watches the word flash, and then types the word from memory. Misspelled words are repeated until the correct spelling is given. At the conclusion of the testing, the student's scores are shown and may be printed (if a printer is available). Up to 200 quizzes may be called.

SPELL IT is self-prompting and virtually "fool proof". It is accompanied by a 25-page manual which instructs how to use the program in very clear and easy to understand steps.

Price: $19.95 Diskette

TEACHER'S AIDE

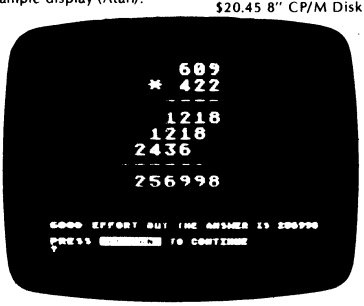
(Available for all computers except North Star)

TEACHERS AIDE is a learning tool meant to be used for grades 1-6 mathematics. There are drills on addition, subtraction, multiplication and division. The child has the choice of five levels of difficulty for each procedure, and there is the option to drill and display each step in long division and multiplication. This is a valuable way to demonstrate the steps involved in division and multiplication and provides the student with insight into the processes involved in these operations. The problems are displayed in large block graphics for easy readability.

Does not run on Commodore 64.
Requires 24K.

Price: $13.95 Cassette
$17.95 Diskette
$20.45 8" CP/M Disk

Sample display (Atari):



PROBABILITY THROUGH PROBLEM SOLVING

(Apple and Atari, diskette only)

This educational package on two diskettes treats probability concepts at a level suitable for grades 7 - 12. Students select from the following menu of subprograms:

1. Introduction
2. Marbles in a Bag
3. Spinner
4. Parachutist
5. Dice
6. Coins
7. Playing Cards
8. Number Cards
9. Marble Bag-Complex
10. A Game
11. Looking Back
12. Self Test

PTPS makes strong use of an area approach to solving probability problems, giving students a concrete feeling for the concepts involved. The Self Test gives a percentage score, tells the problems missed, the program sections these problems came from, and gives the student an opportunity to return for more work on any program section.

PTPS has been tested extensively with students and found to be easy to use, educationally entertaining and challenging. As you can see (two disks), PTPS is an extensive software package.

Requires disk drive and 32K RAM. Comes on 2 disks.

Price: $39.95 Diskette

CRYPTO
(Osborne only)

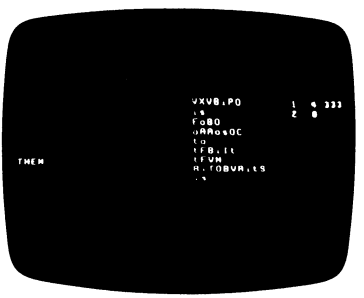
CRYPTO is a comprehensive crytography program which is both challenging and educational. There are two basic ways to play CRYPTO.

1. Automatic: The computer chooses from a file of over 350 quotations which one or two players must decipher.
2. Manual two player: Each player creates his or her own phrase, and CRYPTO creates a cryptogram for the other to decipher.

You may choose the level of difficulty so even the young can play (teaches deductive reasoning and reading skills), and guess by letter or word. You may also add to the list of phrases up to the capacity of the disk.

The key advantage CRYPTO has over board games is that the computer automatically takes care of the tedium involved in the letter replacement and scoring; you are free to THINK.

Sample display: Price: $17.95 Diskette

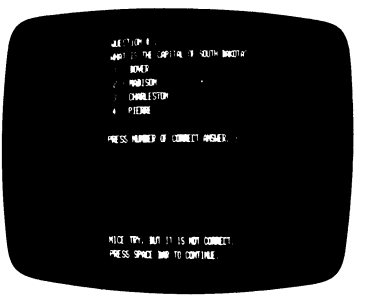


MASTER DRILL
(TRS-80, Apple and CP/M only)

MASTER DRILL is a utility specifically designed for the educational environment. With MASTER DRILL you can quickly and easily set up multiple choice drills on any subject you desire. All you do as the drill creator is respond to the prompts. The program will ask you for the question and its corresponding answer. Later, when that question is presented to the student, between two and nine (your choice) multiple choice answers will be presented, one of which is correct. The incorrect answers are drawn at random from the answers to the other questions. For those who have written multiple choice tests, you know how much time this feature can save.

In addition, if your questions have a common beginning phrase (e.g., "WHAT IS THE CAPITAL OF"), you may pre-set this so that you need only type the remainder of the question when prompted. In this,way files can be quickly built (and added to), and very nice drills created. Included on the disk is a sample drill called CAPITALS.

Sample display: Price: $18.95 Diskette



FEELING BETTER
(Apple II only)

FEELING BETTER is an education program designed to help children reduce their feelings of anger, upset, depression, anxiety, and guilt. It begins with a presentation about the nature of feelings and emotions, so that the child will be able to label and identify them when they occur. It then presents a simple but powerful A > B > C method for the analysis of emotionally disturbing events, and shows the child how to feel less upset in response to those events. Interest is maintained by animations, noises, bells, etc.

The FEELING BETTER package contains one diskette, a manual, a package of FEELING BETTER Self Analysis Forms, and a package of emotional knowledge tests for pre- and post- testing.

Price: $39.95 Diskette

WORLD GEOGRAPHY
(TRS-80 only)

WORLD GEOGRAPHY is a graphical educational tool for teaching the locations, capitals and largest cities of states and provinces within the U.S. and Canada, as well as countries within North America, South America, Central America and Europe. For example, the outline of Europe and its countries may be displayed. The student must name the country with the flashing border. If the answer is correct, the student goes on to being questioned about the name of the capital and/or largest city. If he/she gets it wrong, there is another chance, after which the correct answer is shown. Options are available to review the correct answers, see the score and be tested on the questions gotten wrong. Use WORLD GEOGRAPHY to enhance your child's knowledge or to fill in that gap.

Price: $12.95 Cassette
$16.95 Diskette

Ask for DYNACOMP products at your local computer store.

SERENDIPITY

(Apple diskette only)

This is the third in DYNACOMP's series of educational packages for young children (the first two are HODGE PODGE and CHILDREN'S CARROUSEL). SERENDIPITY was written by a teacher and field tested in an elementary school. It consists of the following nine subprograms:

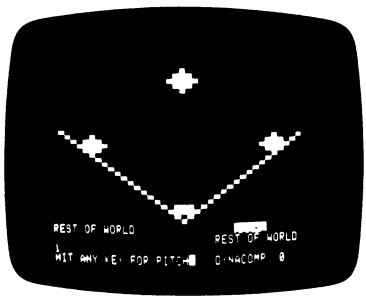
1. Math Invaders
2. Alphabet Match
3. Number Match
4. Mineshaft
5. Mystery Number
6. Number Counting
7. Name that Color
8. Estimation Baseball
9. Sour Apple

Each sub-program is called from a menu. All programs are friendly, have built-in instructions, and are virtually crash-proof.

SERENDIPITY was written with children in mind. After minimal experience, the child usually becomes comfortable with the format of this package. Each program follows a consistent system of entering and exiting. Most of all, the package is fun. The programs tackle difficult concepts in a great variety of ways. Requires 48K.

Sample display:

Price: $19.95 Diskette



Z-TRANSFORM TUTORIAL

(Apple only)

This is the second selection in DYNACOMP's complex plane analysis educational series, the first being FAST FOURIER TRANSFORM TUTORIAL. In Z-TRANSFORM TUTORIAL poles and zeroes and their relation to the Z-transform are described theoretically (in the manual). The resulting filter response function is discussed with respect to rational polynomials and "tapped delay lines". The tapped delay line representation is shown to be amenable to a "difference equation" implementation of a digital filter.

The software is keyed to the manual. You may enter either the pole/zero representation, or the rational polynomial filter function coefficients for up to 30 poles and zeroes. If you give the poles and zeroes, the program calculates the transfer function. If you give the transfer function, the program will give you the poles and zeroes. Also, you are provided with high resolution plots of the amplitude response and impulse and step function responses. Several examples are given.

If you are interested in learning about the Z-transform, the "unit circle", poles and zeroes, and so on, try Z-TRANSFORM TUTORIAL.

Price: $24.95 Diskette

DIGITAL FILTER DESIGN TUTORIAL

(Apple only)

This is the third member in DYNACOMP's complex plane analysis series. In DFDT the subjects of transversal, comb and interpolation filters are theoretically discussed (in the manual) with several examples. Windowing (Bartlett, Kaiser, Gauss, raised cosine, etc.) is considered, along with practical approximations to ideal filters.

The software portion of this package is very easy to use and is keyed to the theory in the manual. You may examine the design of filters from several different aspects. For comb and interpolation filters you may graphically (high-resolution) look at the amplitude and phase response of a variety of transfer functions under an infinity of coefficient conditions. For transversal filters you can graphically and numerically look at the coefficients associated with many standard types of filters, and truncate/window the resulting series coefficients to examine the practical effect on the filter response. You can even multiplewindow. In addition, you can input your own amplitude response coefficients and truncate/window them. The variety of high resolution graphical examples is infinite, making DFDT an excellent tool for either home or classroom instruction. Requires 48K.

Price: $24.95 Diskette

S-PLANE TUTORIAL (SPT)

(Apple only)

This is the fourth member in DYNACOMP's complex plane filter analysis series. The SPT manual discusses the development of analog filters through the use of pole/zero representations. Subjects covered include the narrow and broad band approximations, the unit circle, the Butterworth, Chebychev and linear phase solutions.

The second part of the package, the software, allows the determination of complex poles and zeroes and graphical examination of the frequency responses associated with the material in the manual. You may analyze the responses due to the poles/zeroes which you provide, or determine the poles/zeroes and responses for various order Butterworth, Chebychev and Thompson filters. The variety is infinite, and emphasis is placed on graphical displays.

Price: $24.95 Diskette

BILINEAR TRANSFORM TUTORIAL

(Apple only)

Here is number five in the advanced electrical engineering tutorial series. This one deals with the bilinear transform and how it can be used to derive digital filters from analog RLC filters. The package layout is similiar to the others; tutorial documentation with examples, and graphics oriented software. Requires 48K.

Price: $24.95 Diskette

FAST FOURIER TRANSFORM TUTORIAL

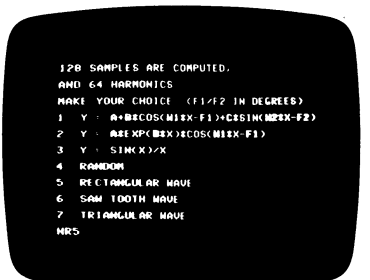
(Apple only)

FAST FOURIER TRANSFORM TURORIAL is a menu driven, graphics oriented education program designed for both class room use and self-instruction. The program itself presumes no knowledge of the mathematics associated with Fourier Transforms. Rather, it permits hands-on experience showing (in high resolution) what the spectra of various waveforms look like. For example, you may examine the spectra of mixed sinusoidal, rectangular, saw tooth, triangular and random inputs under an infinite variety of conditions. You may even input your own signal. Further, you may examine the spectra of several window functions and digital transmission formats.

The resulting spectra may be plotted as well as listed. It should be stressed that FFTT is an educational program, which is highly tutorial in character. It does not have the data storage, retrieval and editing features of DYNACOMP's HARMONIC ANALYZER. However, if you want to get a feeling for Fourier Transforms, or already have some knowledge and want to learn more, this is a good program to use.

Requires 48K. Includes a manual which describes in some detail the mathematics of the FFT. Included on the DYNACOMP disk are an Applesoft and a compiled object program.

Price: $24.95

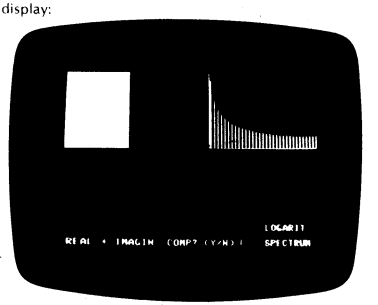


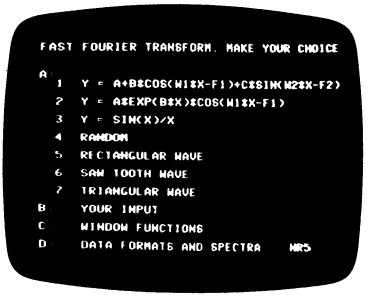
HINT

(CP/M)

FILE NOT FOUND. Simply put, the computer cannot find the file you named. Did you use CAPITALS? Although some machines allow lower case letters, it does not always work. Check the directory for the right name.

Sample display:





TYPEMASTER

(TRS-80 only)

TYPEMASTER is a tutorial program for learning and exercising touch-typing with the TRS-80 Model I or III microcomputer. This program requires no previous computer experience because only the typewriter-like qualities of the microcomputer are used. TYPEMASTER is very convenient for self-instruction or for the classroom.

The program begins with an explanation of the principles of touch-typing and a graph of the home position of the fingers on the keyboard. The following lessons familiarize the student with the positions of the characters, drilling him or her in the use of the correct fingers. Following these lessons you are presented with achievement tests and drills in single words that require either or both hands. The final lessons are drills and tests in typing words and sentences.

Requires 16K.

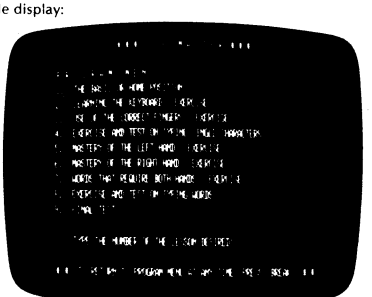
Price: $14.95 Cassette
$18.95 Diskette

HINT

(CP/M)

You are in BASIC and get a TYPE MISMATCH error when trying to load a program from BASIC. Did you forget to put quotation marks around the name?

Sample display:



ELIZA II

(Available for all computers except Apple, Commodore, North Star (BASIC) and Atari)

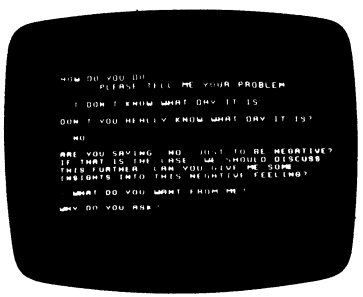
This is the well known artificial intelligence program which was originally written by Joseph Weizenbaum for the large computers at MIT. ELIZA simulates a session with a psychotherapist who analyzes your comments and responds accordingly. This program has gained particular recognition for its surprising ability to provide realistic responses to your statements, and has often been referred to in reference to Turing's test for human intelligence.

DYNACOMP's version of ELIZA is unique in that several new features have been added without compromising the quality of the original. For example, the range of the dialogue has been increased and the responses are less patterned. The entire exchange may be saved and recalled from disk. You can save and continue sessions later. You may add in your own code (the program is in BASIC) to extend ELIZA's abilities. And more! However, don't take ELIZA's responses too seriously. After all, it's only a computer (or is it?)!

Requires 48K.

Price: $19.95 Diskette
$22.45 Disk

Sample display (Osborne):


HOW DO YOU DO.
PLEASE TELL ME YOUR PROBLEM
I DON'T KNOW WHAT DAY IT IS
DON'T YOU REALLY KNOW WHAT DAY IT IS?
NO
ARE YOU SAYING NO JUST TO BE NEGATIVE?
IF THAT IS THE CASE WE SHOULD DISCUSS
THIS FURTHER CAN YOU GIVE ME SOME
INSIGHTS INTO THIS NEGATIVE FEELING?
WHAT DO YOU WANT FROM ME?
WHY DO YOU ASK

TWO-PORT ANALYSIS TUTORIAL

(Apple only)

Here it is — number seven in DYNACOMP's electrical engineering tutorial series. This analysis package allows you to learn about and examine the transfer characteristics of "black boxes" having two ports (four terminals). For example, a transistor may be considered a four-terminal device if the base is used for two of the terminals (e.g., common base configuration). The device description used is based on Y-parameters.

The manual has two sections. The first deals with the theory behind Y-parameter descriptions and response stability. The second part deals with computer examples, in particular the design of a transistor amplifier having several RLC components.

As with the other packages in this series, the software is graphics-oriented. The equivalent circuit is pictorially displayed on the screen, as well as the G_L circle corresponding to the stability limit. Also superimposed are the B_L circles.

This package is ideal for the student or professional who is studying linear systems. Price: $24.95 Diskette

CAT (COMPUTER-AIDED-TEACHING)

(TRS-80 only)

The CAT (Computer-Aided Teaching) package consists of two programs, CATGEN and CAT. CATGEN is used by the teacher to create lesson, test and lesson plan files. CAT is used by the student to run the lessons and tests created by the teacher.

A lesson created by CATGEN consists of a screen of mixed text and graphics, with an optional practice question mode. In creating the lesson the keyboard directional controls are used to place the cursor and write mixed text and graphics.

The teacher may also enter up to 50 multiple choice questions, with 5 possible answer selections for each question. Automatic correction and scoring is provided by CAT during the administration of the test.

The lesson plan file creation procedure provides the teacher with a method of automatically administering a specific sequence of lessons and tests to the student. The lesson plan consists of a chain of lesson file and test file names, which will automatically be run by CAT when the lesson plan is entered.

Editing options are provided. Most commands are menu-selected, and the operator is prompted for most entries.

The CAT portion of the package provides the operational environment for student use of the files created by CATGEN. The student is prompted to enter his/her name, the date, and the name of the assignment. CAT automatically types the selected assignment and proceeds to present the lesson or test to the student. CAT provides correction and scoring for practice questions and tests, and presents the results and correct answers to the student. The results may be optionally sent to the printer. Error checking and trapping is provided to prevent crashing the program through nonsense input.

If a lesson plan is loaded, CAT will automatically load and run the lessons and tests contained in the plan. Otherwise, the student must enter an assignment name for each lesson and test.

COMPUTER AIDED TEACHING is flexible enough to be used for every subject and grade level. It can even be used in business and industry for training. Includes a detailed manual. Requires 48K. Printer optional.

Price: $39.95 Diskette

POWER AMPLIFIER DESIGN TUTORIAL

(Apple only)

Meet number six in DYNACOMP's electrical engineering tutorial series. This installment deals with vacuum tube RF power amplifiers. As with the other numbers of the series, the theory is covered in detail in the documentation, with emphasis on graphical analysis. The software graphically deals with the amplifier design factors, plots the path of operation and anode current, and calculates more than nine other characteristics. Included is a complete sample exercise for designing a Class B amplifier. A nice educational purchase!

Requires 48K.

Price: $19.95 Diskette

THE INVESTING ADVISOR

(TRS-80 diskette only)

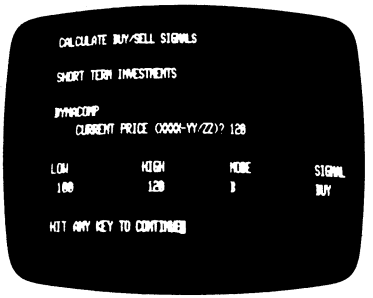
THE INVESTING ADVISOR is a tool that will help the investor make unemotional decisions about the buying and selling of his investments. It incorporates a means of timing the purchase and sale of investments based on a price-trend analysis and on buy/sell rules. It includes the ability to track both long- and short-term trends, so that the investor can pick the best strategy for his needs. Up to 64 long-term and 64 short-term investments can be tracked at the same time. The investor can initialize his data base, add or delete investments, calculate the action to take and adjust the data base for splits of the investment. Data is entered daily for short-term investments and is entered weekly for long-term investments. The data entered is the closing price for the investment, available from the newspaper. It is in the form of the price as it appears in the paper.

The objective of the long-term investment strategy is to go over a year, if possible, without selling. The selling rules provide a reasonable compromise between the desire to go long-term and the need to protect profits or to prevent substantial losses, if the investment turns down significantly. The objective of the short-term investment strategy is to maximize capital gains without regard to the tax consequences of selling. The selling rules provide a compromise between giving the investment room to maneuver as it moves up and the need to protect profits or to prevent substantial losses, if the investment turns down.

The program has been written to be as structured as possible. The logical levels of the program have been indented so that the user can understand the flow of the programs, if he desires.

Requires 48K.

Price: $39.95 diskette



HINT

(Atari disk)

ERROR 162: You have filled up the disk (this sometimes happens with BRIDGE MASTER). Delete some old data files to make more room.

HINT

(NEC)

When given a choice to run under NBASIC or CP/M and MBASIC, choose the latter; you will have more free memory to work in.

STOCK MASTER/STOCK PLOT

(Apple diskette only)

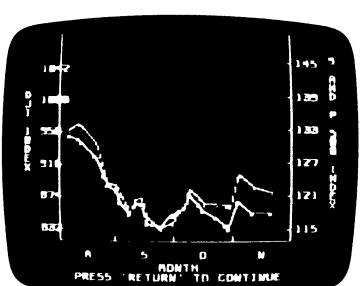
STOCK MASTER and STOCK PLOT are companion programs designed to help the investor record fiscal data on companies of interest, record stock transactions, and track price action on these same companies. With these programs you may:

- Maintain records for up to 30 stocks.
- Store 10 years of fiscal data for each stock (including revenue, earnings per share, return on equity, quarterly earnings per share, and quarterly dividends per share) and historical price data limited only by diskette storage space.
- Maintain up to 8 portfolio files which are composed of any combination and any number of shares of the stocks you are tracking.
- Record up to 20 buy/sell transactions for each of the stocks you are tracking.
- Enter transactions in a capital gains file and list or print your capital gains by year and by short or long term.
- Enter prices of any or all of the stocks at whatever frequency you desire. In addition to writing files to maintain historical records of those prices, STOCK MASTER will maintain files of the Dow Jones Industrial Index, the Standard and Poor 500 Index, and the NASDAQ Index at the same frequency.
- Calculate "trailing" Price/Earnings ratios for any stock for which you have entered quarterly earnings data for at least the last four quarters.
- Display the value of any of the portfolios you are maintaining using the most recently entered price for each stock.
- Plot graphs of the price history of any stock vs. any other or vs. on the Indexes. Axes are automatically scaled and labeled on the hires screen. Hard copies may be readily obtained by either dumping directly to a printer or to a disk and then to a printer of your choice in a later step. Data can be plotted for the last 3, 6 or 12 months.
- List the historical price record of any stock or portfolio.
- Plot the historical value of any portfolio as a percent of the first value plotted.
- Alter portfolios at any time and, if desired, maintain a cash balance for each portfolio.

STOCK MASTER/STOCK PLOT requires 48K of RAM, can operate with one or (preferably) two drives, and can print tabulations to a hardcopy device. Comes complete with a 32 page manual and sample files.

Price: $59.95

Sample display:



STOCKAID

(32K Atari Diskette only)

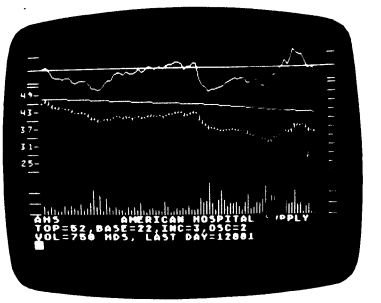
STOCKAID is a stock market data entry and analysis program which allows the user to plot and graph the performance of investments and to derive many useful calculated indices from the data. Using the daily volume, daily high, low and close figures (all of which are readily available from the newspaper) STOCKAID creates data files on stock performance. Data entry is remarkably simple and streamlined, and editing and correction are easily accomplished. Seventeen stocks may be stored per diskette, and the file on each stock may contain data for up to 239 days of stock trading.

After data files are created, STOCKAID permits review and analysis of the data in many ways which are useful to investors. Multiple options are available for displaying graphic representations of data, all of which are accessible from simple menu choices. All graphs have labeled axes, allowing for easy interpretation of data. Trend lines may be superimposed on the graph for enhancement of the display. A short term oscillator and long term moving average are automatically displayed along with daily volume, high, low and close. Point and figure plotting is also available for each stock.

Another feature is the ability to calculate stock splits and to reprocess the data file automatically based on the price adjustment factor. These features, along with the intelligent and pleasant user interaction format make this the premier stock charting and analysis program available today. This is a must for the interested dabbler as well as the serious investor.

Price: $29.95 Diskette

Sample display:



PORTFOLIO MANAGEMENT

(Apple and CP/M diskette only)

The PORTFOLIO MANAGEMENT package was written by a stock broker to help manage portfolios for individual customers. With this program, data files can be easily created and kept up to date. A variety of reports, attractively and professionally laid out, can be generated for clients. The user may define his/her own investment categories. PORTFOLIO MANAGEMENT is a top-quality professional tool which will not only provide you with conveniences but will also serve to enhance your appearance as an efficient and up-to-date advisor to your clients. Comes complete with a 30-page manual.

The CP/M version is aimed at the individual user. It contains all of the basic features of the Apple version, but it is tailored to the individual investor. In addition, detailed file sorting and plotting capabilities have been added. The CP/M version includes a 67-page manual (50 pages of instructions and examples and 17 pages of program listings) and requires 48K.

Price: $69.95

Sample display (Apple):

PORTFOLIO MANAGEMENT SYSTEM
FUNCTIONS THAT I CAN DO FOR YOU
(A) PREPARE NEW CUSTOMER DISKETTE
(B) UPDATE CUSTOMER INFO
(C) CHANGE SYSTEM CONSTANTS
(D) CHANGE PORTFOLIO INFO
(E) ADD STOCK TO PORTFOLIO
(F) POST MARKET PRICES
(G) POST DIVIDENDS
(H) PORTFOLIO LIST (CODE SEQ)
(I) PRINT ACCOUNT ANALYSIS
(J) RUN DISKETTE COPY PROGRAM
(K) RESERVED FOR EXPANSION
(L) END OF PROGRAM
ENTER YOUR SELECTION

MICROCOMPUTER STOCK PROGRAM (MSP)

(available for all computers)

The MICROCOMPUTER STOCK PROGRAM (MSP) is designed to help you analyze stock prices. It provides timing signals for stock purchases and sales. Buy and sell indicators are generated by means of a unique auto-regressive price trend analysis. MSP requires only weekly high, low, and close prices and the volume of shares to aid your investment decisions. It has several features:

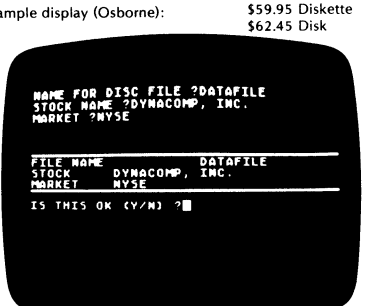
- generate buy/sell signals for the last 8 weeks
- print a volume/price/moving average chart on any 80- or 132-column printer.
- complete data maintenance facilities, including on-screen viewing and easy editing for adding, changing or deleting data.
- simple adjustment for stock splits and dividends
- list price/volume data to printer
- completely menu driven and easy to use.

MSP is provided with documentation which includes instructions for operating MSP and tips on how to employ MSP effectively.

System requirements: cassette, with 16K RAM (minimum) or one diskette, with 32K RAM (minimum). Printer optional.

Price: $55.95 Cassette
$59.95 Diskette
$62.45 Disk

Sample display (Osborne):



OPTIONS ANALYSIS

(TRS-80, Apple, Osborne-1 only)

OPTIONS ANALYSIS provides one of the most complete analyses available for PUT and CALL prices as a function of both stock price and time-to-expiration based on the principal investment strategies which one might employ. The analyses present information on the profit potential both in dollars and in annualized percentages (where applicable) for any desired range of stock price and time-to-expiration.

OPTIONS ANALYSIS is menu-driven, easy to use and is accompanied by a very professional manual which fully introduces the concept of options and "walks" the user through the various menu options. The basic program elements include determining the values of PUT and CALL options, PUT and CALL writing, spreads and straddles. Altogether six strategies are provided. The Black-Scholes formula is used for determining the values of CALL options. The primary strategy for call writing is "hedging", and is a subcase of the spreads strategy for the case in which the options only are sold.

Typical inputs to the program are (CALL writing case)

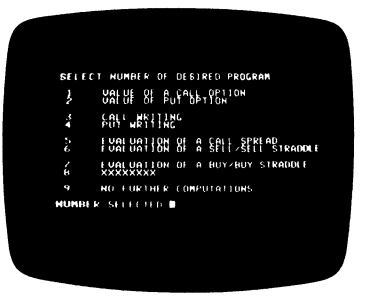
- Purchase price
- Number of shares
- Number of calls sold
- Percent interest
- Volatility percent
- Exercise price of CALL
- Price of CALL option
- Initial buy/sell date
- Option expiration date
- Stock price at which to begin computation
- Price increment, highest price
- Dividend information

The corresponding outputs are:

- Value of CALL and profit on the day the position was established
- Results of position on the last day

OPTIONS ANALYSIS features the ability to try other approaches so as to facilitate experimenting. An 80 column printer is supported. Requires 48K.

Sample display: Price: $99.95 Diskette


SELECT NUMBER OF DESIRED PROGRAM
1 VALUE OF A CALL OPTION
2 VALUE OF PUT OPTION
3 CALL WRITING
4 PUT WRITING
5 EVALUATION OF A CALL SPREAD
6 EVALUATION OF A SELL/SELL STRADDLE
7 EVALUATION OF A BUY/BUY STRADDLE
8 XXXXXXXX
9 NO FURTHER COMPUTATIONS
NUMBER SELECTED

NYINDEX

(Atari diskette only)

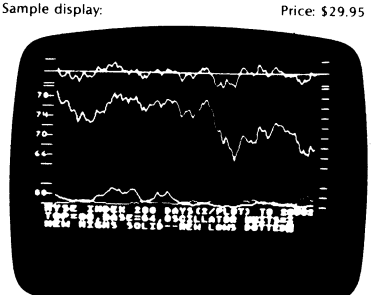
NYINDEX is a comprehensive software package for storing, retrieving and plotting New York Stock Exchange information. The daily inputs accepted are the NYSE composite index, advances, declines, new highs and new lows. The plotting functions are exceptionally nice. They include displays of the NYSE index oscillator, new highs, new lows, cumulative advances - declines and NYSE long term average.

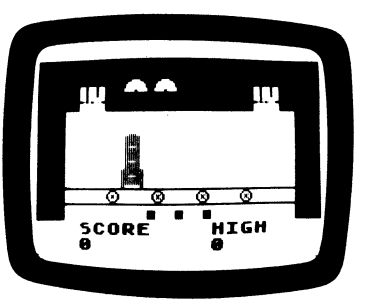
The market history display consists of three bands of data and a legend. The top band gives the short term oscillator representing the difference between the day's index and its short term moving average. The middle band shows the Composite Index Action for the period requested, and optionally the Cumulative Advance - Decline Line and Long-Term Average. The bottom band shows the short term moving averages for the new highs and lows.

Other NYINDEX functions included involve trend line points and extensive disk review/editing ability.

The NYINDEX package comes complete with two years worth of daily data. Our masters are updated monthly and updates are available at anytime for a five dollar service charge (plus postage and handling). Requires 32K.

Sample display: Price: $29.95





IDENTIFY THIS PHOTO

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Contest rules may be found on page 97.

MICROCOMPUTER BOND PROGRAM

(available for all computers)

MICRQCOMPUTER BOND PROGRAM is designed to help you evaluate bonds. It provides a quick and easy way to estimate the prices and yields of fixed income securities under a broad range of assumptions and estimates about the future.

The price of a bond depends upon several factors including the risk of the issue, the interest it pays, the date it matures (or is subject to early call), the general level of interest in the market, and the expectations of the market for the future course of interest rates. The yield of a bond is influenced by the investor's tax rate, by the length of time the bond is held, and of course, by the price paid for the securities.

While MBP cannot help you predict the future, it can surely show you the results of any combination of circumstances you predict on the price of a fixed income security. And knowing that, you can make better decisions concerning the issues you invest in.

MBP provides:

Complete bond data entry, editing, listing and storage capabilities.

A flexible analysis environment, including market interest levels and tax rates.

Bond yields before maturity, showing estimated price, total dividends, and gross yield.

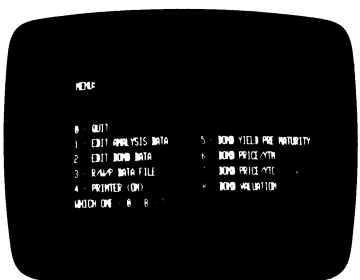
Bond prices estimated over time, at various market interest rates, evaluated to either maturity or early call.

Bond valuations, showing current yield, and before and after tax yield to maturity.

With MBP, the questions you have concerning the future performance of bonds can be answered quickly, easily, and with a minimum of work.

Cassette version requires 16K; diskette version 32K.

Price: $55.95 Cassette
$59.95 Diskette
Sample display (TRS-80): $62.45 Disk


MENU
0 - QUIT
1 - EDIT ANALYSIS DATA
2 - EDIT BOND DATA
3 - SAVE DATA FILE
4 - PRINTER (ON)
5 - BOND YIELD PRE MATURITY
6 - BOND PRICE/YTM
7 - BOND PRICE/YTC
8 - BOND VALUATION
WHICH ONE ? 0

IRMA

(Atari and IBM only)

Investment Records Management Aid (IRMA) is an easy-to-use, all-inclusive tool for everyone interested in financial, tax and investment planning. It provides convenience and efficiency for recording and tracking essential investment information and versatile, user-friendly methods to take advantage of this information for all of your planning requirements.

Pertinent data for a diversified portfolio of up to 70 different investments are entered quickly and easily. IRMA handles common stocks, preferred stocks, bonds, deposit accounts, funds, partnerships, options, taxable and non-taxable investments.

IRMA's varied presentations of your own data will support your decision-making in three major areas: financial planning, tax planning, and investment planning. Available aids include:

- Cash income forecast for any month.
- Annual income distribution by month.
- Cost-versus-value summaries.
- A complete history of all investment activity.
- Capital gains/losses summaries showing annual or year-to-date short- and long-term results.
- Income totals by investment and by type.
- Percentage distribution of portfolio by category.
- Investment value comparisons between dates.
- Records of shares owned, certificate numbers, income history, etc.

A printer is supported, but not required.

Sample display (Atari): Price: $49.95 Diskette

FUNCTION SELECTION MENU
1 - START NEW INVESTMENT
2 - CORRECT MASTER ITEMS
3 - CORRECT DEPOSITORY NAME
4 - ENTER UNIT VALUES
5 - ENTER TRANSACTION
6 - CORRECT TRANSACTION ITEMS
7 - ENTER INCOME RECEIVED
8 - CORRECT INCOME ITEMS
9 - ENTER SPLIT OR STOCK DIVIDEND
10 - SUBDIVIDE A TRANSACTION
11 - CONSOLIDATE TRANSACTIONS
12 - DELETE ENTIRE INVESTMENT
13 - DELETE A SINGLE TRANSACTION
14 - DELETE ALL INCOME & PAIRED TRANS
15 - DISPLAY REPORTS
16 - QUIT
ENTER FUNCTION NUMBER

IDENTIFY THIS PHOTO

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Contest rules may be found on page 97.

BUYSEL

(CP/M and IBM only)

BUYSEL is suitable for both the curious beginner and the serious investor. It is a comprehensive software package for peforming analyses of stocks, commodities, and options. It contains the following features:

- Four distinct trading methods and money-management systems, all of which produce explicit buy/sell transaction signals:
  - Moving Average Method
  - Price Channel Method
  - Buy Low, Sell High System
  - Dollar-Cost Buying System
- Black-Scholes call option model over any time period for a common stock.
- Statistical correlation computation between several stocks or commodities. This quantifies the degree of like behavior for different price actions over a common time period.
- Automatically scaled closing price charts requiring only a normal 24-line x 80-character video screen.
- Price data entry and validation on a daily basis, or quick approximation of long periods of real price data.

The inclusion of four different trading methods and money-management systems allows you to experement and find the most suitable technique for trading a particular stock, option, or commodity. It also enables an investor to identify the technique that best matches his/her own investment objectives and style. Price charts show at a glance the price action for a selected price file over any chosen period of time. All transaction signals from the various methods are displayed on the charts as well.

Using a convenient menu structure with several HELP commands, BUYSEL has been designed to be extremely user-friendly and easy to operate. The documentation includes fully detailed operating instructions as well as an analytical description of all techniques and analyses performed.

Price: $149.95 Diskette
$152.45 Disk

NOT AVAILABLE on single-density Osborne or single-density North Star CP/M diskettes — it contains 110K of programs!

ATARI PROGRAMMING HINTS

Simply put, the ATARI 400/800 is a great graphics machine and there is a lot of computer sitting in that plastic case. To properly learn how to program this machine, you should consult one of the many books written on the subject. The items described below are simply some useful programming hints which DYNACOMP and its customers have found useful.

LOAD, ENTER/SAVE, LIST

ATARI users are familiar with the cassette and diskette commands CLOAD (cassette), LOAD (diskette), CSAVE (cassette) and SAVE (diskette). Most people consider these commands to be simply ways to load and save their programs. But what is really happening is *not* simple. When you SAVE a program, you are actually saving two things:

Continued Next Column

1. A "tokenized" representation of your program.
2. A variables map.

This is part of the reason why it takes so long to load and save ATARI programs.

Now for a problem. You are writing a large program which contains many variables. However, you are only allowed 128 different variable names in ATARI BASIC. Upon trying to enter a line containing the 129th variable, you get the tell-tale error. So you decide to reduce the number of variables by combining several in an array (that you are already using) to free up some space. Then you try to enter that line again and get the same error! But you ***know*** that there are now only 102 variable names! Well, maybe ATARI remembers those old variables (it does), so you decide to SAVE the program, turn off the computer, and reload it. After all, how can it remember anything if it is turned off? So you reload the program, try to enter that last line again and the same error occurs! How do you get out of this trip?

The answer is that you should use the commands LIST and ENTER. LIST saves the program as it appears on the screen, character by character. Nothing is tokenized, and no variable map is included. The command format is:

LIST "D:filename"

To save the whole program, or (for example) to save lines 100 through 280:

LIST "D:filename", 100, 280

To recall the "listing", use the command ENTER:

ENTER "D:filename"

This will enter the program *just as if you had typed it in from the keyboard.* Therefore, if you had a program in the computer already, it will be merged with the program being ENTERed. If there was a line 100 in the program already in the computer and you ENTER one which also contains a line 100, the first entry will be replaced by the one ENTERed.

There are three general situations in which the LIST and ENTER commands are useful:

a) You want to clear the variables map and start fresh. This is the solution to the problem which was posed. Also, whenever you finish a program, you should go through the LIST/ENTER sequence; it ultimately saves memory and speeds the program up a little.

b) You want to add (or merge) one program to another. For example, DYNACOMP's BASIC SCIENTIFIC SUBROUTINES are saved as LIST files. This way the programmer can add on subroutines as desired.

c) You want to save your programs as text files so that they can be modified by a text editor/word processor.

HINT

Watch for hints and helpful information about ATARI programming and equipment. And keep an eye out for our photo identification contest. It can save you money!

JOBMASTER
(TRS-80 only)

JOBMASTER is designed for supervisors, managers, and engineers who are responsible for managing small production and assembly programs. Typical examples would include machine shops, sheet metal shops, mechanical assembly areas, and electronic assembly areas. Practically any business involved in manufacturing or assembling a product can make use of JOBMASTER.

The JOBMASTER program allows the user to set up a data file describing each individual operation in the shop area, including the station, contract or project, task name and description, date, employee name and I.D., and shift. Also included is a cost breakdown which includes labor, material, and work station costs, as well as hours worked, projected production and actual production. Full data file editing capability is provided, as well as a very useful automatic updating command which provides easy data file maintenance and permits changes and updates to the data file to be made with great rapidity.

In operation, the program provides full sorting and searching capabilities, allowing the file to be sorted by any data category, as well as limited and global searching for keyword matches. Both text and numeric data may be searched and sorted.

A major feature of the program is the file evaluation command. This command can be used to compute costs and man-hours in a variety of ways. As an example, computation can take place on a station-by-station basis, a contract-by-contract basis, an employee-by-employee basis, or a date-by-date basis. In fact, the evaluation can be keyed to any of eight possible data categories. Costing information is provided on an item by item basis, as well as being totalized by category item.

The evaluation function features a pre-sort option, which allows the file to be sorted by a user selected category prior to the actual evaluation. This feature, along with the category selection options of the evaluation, provide a great selection of choices with regard to data presentation and evaluation results (approximately 64 variations).

JOBMASTER also provides a schedule generating feature. By appropriate selection of category, 8 different types of schedules can be created, such as a day-by-day schedule, contract-by contract schedule, employee-by-employee schedule, and so forth.

Another feature of the JOBMASTER program is the ability to generate cash flow/man loading projections. Again, a number of options are provided to generate cash flow based on a number of possible categories, including contract-by-contract and day-by-day projections.

JOBMASTER's versatility lies in its ability to evaluate and output the contents of the data file in a number of different ways, providing the user with a maximum amount of data in a user-selected format. The user is thus provided with rapid access to vital information to aid in the scheduling, planning, and control functions of the production area.

JOBMASTER operates as a user-friendly program, providing menu-driven commands and prompts for all data inputs. Several convenience and data-verification features are also incorporated into the program to provide for ease of use. Error-trapping is provided to prevent data loss in the event of disk errors or similiar problems.

Requires 48K, disk drive and printer.

Price: $69.95

BOOKKEEP
(CP/M CBASIC only)

BOOKKEEP is a general ledger and financial statement preparation program designed for small business use. It has a high degree of flexibility and is meant to be used by someone who has a strong familiarity with bookkeeping. BOOKKEEP will permit you to enter transactions, prepare formal financial statements, query account balances, close the books, prepare statements by company segment, and print out both ledgers and journals. The program employs a double entry bookkeeping system and can be used either on the cash (tax) basis or accrual basis.

The major account categories covered are current assets, property/plant/equipment, current assets, debt, equity, revenues, cost of sales, R and D, selling expenses, administration expenses and "other". Each of these categories is further broken down into several subcategories.

BOOKKEEP runs under CBASIC (which comes with many machines, such as the Osborne-1), and requires a printer, 56K.

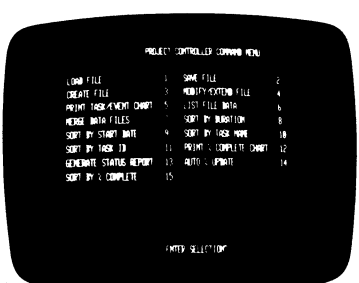
Price: $69.95 Diskette
$72.45 Disk

PROJECT CONTROL ONE
(TRS-80 only)

PC1 is a basic project control and scheduling program designed for engineers, managers, builders, and other supervisory personnel who have responsibility for project management. The program provides numerous options and capabilities for obtaining a maximum amount of useful information with a minimum amount of input data. The program does not require the use of CPM or PERT techniques, (or familiarity with them) and was designed for projects whose size and nature do not necessitate a rigorous application of these methods. The program provides user-friendly menu selections for the command functions, and supports hard-copy output as well as CRT display. A printer is highly recommended, as the printed task/event charts and percent complete charts are printer-only functions. Both 80 and 132 column printers are supported, including selectable density types.

Sample display:

Price: $49.95 Diskette



SMALL BUSINESS SYSTEM

(Atari only)

At last a comprehensive business software package for the Atari computer! SBS was written by a physician to handle the accounting, examination and scheduling chores involved in his practice. However, other than the items specific to examinations, SBS is a general small business system which can print checks, maintain a mail list, send statements, and more. You can get an idea of the functions involved in SBS from a listing of the contents of the manual:

ACCOUNTS
- New Account
- Change Account
- New Account with Transaction
- Account Information
- Referral Note
- Statements
- Individual Statement
- Credit Accounts
- Outstanding Accounts
- Mailing List
- Accounts List

TRANSACTIONS
- New Transaction
- Transaction List
- Transaction Totals
- Account Transactions
- Bank Deposit

CHECKS
- New Check
- Checks List
- Checks Totals
- Check Purpose Only

EXAMINATIONS
- New Examination
- Change Examination
- Print Examination
- Birthday Note
- Recall Note
- Examination List

Originally SBS sold for $199.95. However, when DYNACOMP took over distribution we decided to go for volume sales with a *low* price.

Requires 48K, two drives, printer. Comes on two diskettes.

Price: $69.95

HINT

(cassettes)

If you are experiencing tape loading problems, the tape may be unevenly wound and binding. To free it up, sharply slap the flat side of the cassette down on a hard surface. This forces all of the tape against one side of the housing evening up the edges and allowing it to run smoothly again.

CONTRACTOR MANAGEMENT PROGRAM

(TRS-80 only)

The CONTRACTOR MANAGEMENT PROGRAM (CMP) is a management tool designed to assist general contractors and related businesses in the processes of estimating, planning, scheduling, and controlling of the contracting business. The program has a large menu of functions which provide the user with cost, scheduling, and resource utilization information in a wide variety of formats.

In operation, the CMP provides for setting up of four data files containing information on equipment, personnel, materials, and contracted services. Each entry in each file contains information defining the name, site, location, task, function, cost, and scheduling of the item. Employee entries provide for overtime and doubletime considerations.

Utilizing the data files, the program provides standard searching and sorting functions, and supports multi-file chain operations.

An evaluation command provides the user with a number of options for evaluating cost. The entire file may be processed, or individual entries may be selected and processed. The evaluation command also includes a powerful category evaluation option, which allows the user to figure costs for all unique entries within a category. As an example, a file containing 30 entries for 6 dump trucks, covering 5 different sites and time periods for each truck, would result in the generation of 6 printouts, covering a complete cost evaluation for all entries pertaining to each truck. This command can be performed on a wide variety of categories, providing cost and utilization breakdowns in a large number of convenient formats.

CMP also includes a tracking command. This command allows the user to generate specialized data dumps by any data category. As an example, a printout can be generated to provide schedules for each piece of equipment or employee. Or a printout can be made to show activities at each work site, or to show resources assigned to each task. The track command operations on a number of data categories, providing the user with convenient and useful data in a wide range of possible formats.

CMP is a user-friendly, menu-driven program which prompts for each required input. Error-trapping is provided to prevent data loss in the event of DISK FULL and similiar errors. Line printer output is supported, and is recommended for several of the program functions. Pagination and screen control is included to provide neat, easy-to-read printouts.

CMP includes data verification routines for data inputs and provides full data file editing capabilities. Additionally, a useful updating command is included to allow any data category to be rapidly updated without editing the entire item. This function is especially useful in using old data files to create new ones with a minimum of typing.

Requires 48K, one disk drive and a printer.

Price: $59.95 Diskette

FINANCIAL MANAGEMENT SYSTEM

(North Star only)

This is one of the most complete financial analysis packages available today. In addition, it is not simply a collection of programs, but rather a highly organized menu-driven set of coordinated subprograms which are a pleasure to use. Some of the topics covered are:

- Financial Ratios (liquidity, leverage, activity, profitability)
- DuPont Analysis
- Break-even Analysis
- Lease-Buy Decision
- Net Present Value
- Rates of Return (internal, modified, adjusted)
- Profitability Index
- Inventory Model (Economic Ordering Quantity Model)
- Capital Budgeting Under Uncertainty
- Refunding a Bond (value of a right, over subscription allocation, cumulative voting, stock dividends)
- Stock Valuation (perpetual bond, preferred stock, short term bond, common stock, rate of return, stock value)
- And more

Comes complete with a very well written and nicely organized instruction book (over 160 pages). Requires 48K. An 80 column printer is supported.

Price: $149.95 Diskette
$152.45 Disk

Sample display:

TIMEMAP

(TRS-80 only)

TIMEMAP is a generalized hard-copy schedule generating program which may be used for a variety of purposes. Its main function is the generation of a printed bar-chart schedule, which may be used to graphically illustrate time-event relationships. Supporting functions of the program include a variety of printout formats, editing capabilities, data searching, and sorting of the data file. Typical uses for this program includes support of small engineering projects, illustration of various business activities and phases, illustration of production schedules, timing of component and equipment reliability testing, employee schedules, and so forth. Requires 48K and 80 or 132 wide printer.

Price: $29.95 Diskette

CUSTOMER PROFILE

(TRS-80 and CP/M only)

CUSTOMER PROFILE provides an easy way to keep track of current and prospective customers according to business type, services or products provided the customer, and assigned sales representative or territory.

CUSTOMER PROFILE is extremely flexible and accommodates the unique ways business is conducted. For example, data files can be quickly sorted to present reports in a sequence appropriate to management requirements. Additionally, the system codes can be redefined to meet the special needs of any company.

CUSTOMER PROFILE uses a customer data file and three tables.

The customer data file contains:

Customer name and address
Customer telephone number
Sales contract
Customer status (customer or prospective customer)
Business type
Sales code (user defined)
Territory/representative assignment
Product/service
Date of the most recent sales call

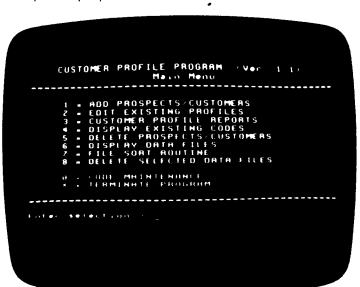
The tables are:

1. Business Type
2. Assignment
3. Products and Services

Comes complete with an exceptionally well prepared instruction book (50 pages).

Price: $59.95 Diskette

Sample display (TRS-80):


CUSTOMER PROFILE PROGRAM
Main Menu
1 = ADD PROSPECTS/CUSTOMERS
2 = EDIT EXISTING PROFILES
3 = CUSTOMER PROFILE REPORTS
4 = DISPLAY EXISTING CODES
5 = DELETE PROSPECTS/CUSTOMERS
6 = DISPLAY DATA FILES
7 = FILE SORT ROUTINE
8 = DELETE SELECTED DATA FILES
9 = CODE MAINTENANCE
0 = TERMINATE PROGRAM

HINT

(CP/M, TRS-80 diskettes)

You are in BASIC and try to load a file and get a DIRECT STATEMENT IN FILE error. Are you trying to load a data file by mistake?

PAYFIVE

(Apple II 48K Diskette only)

If you run a small business with less than 150 employees and you have an Apple computer, then this program is a must. PAYFIVE is the most complete, flexible and easy to use payroll accounting package available. At every level of function, PAYFIVE offers superior features compared to other payroll accounting packages. Most important of all, these features are extensively documented in a 220 page reference manual that clearly outlines each step. However, the prompts within the program are so clearly presented that reference to the printed manual is usually unnecessary!

Examples of some of the flexible features included in PAYFIVE are:

1) Personnel may be paid on an hourly, commissioned or salaried basis, in any combination, and with any mixture for one employee.
2) You may define up to four special departments tailored to your accounting needs.
3) You may define vacation and sick time record keeping procedures.
4) Subtotals are kept on a monthly basis (as opposed to the quarterly totals available with most other packages).
5) You may define up to five optional deduction categories in addition to the usual standard deductions.
6) Federal, State, and Local taxes are compiled automatically, and reports are available for each. Each tax is user-defined. The documentation comes with State Tax Tables for each state to make the initial set up of the program straight forward.
7) Twenty-one different reports are available, including the printing of forms such as the W-2, 940, 941, and State Withholding Tax forms. PAYFIVE will even write checks if you wish!
8) Employees may be paid on a weekly, semi-monthly (both odd and even weeks), biweekly and monthly basis. Different employees may be paid on different bases.

This list does not exhaust the features which PAYFIVE offers. Perhaps the most important feature to mention is that there are special capabilities which will allow your accountant to do your records from the check stubs. This will ultimately save you enough in accounting costs to pay for the cost of the system many times over.

If you do not have an Apple for your business, PAYFIVE might even be enough reason to buy one. We recommend this product highly.

Price: $149.95 Diskette
Manual available separately for $30.00

Sample display:

PAYROLL PROGRAM VERSION 5.0
1 DO PAYROLL
2 PRINT REPORTS
3 ENTER/CHANGE EMPLOYEE DATA AND OR CORRECT PAYROLL DATA
4 MAKE BACKUP COPIES
5 EXECUTE UTILITY PROGRAM
SELECT

LIFE CYCLE ANALYSIS AND DEPRECIATION

(Apple diskette only)

This software package creates a data file of business expenses for equipment which can later be used to calculate and display a variety of reports. You may project annual costs, find the present worth, create depreciation schedules and justify tax deductions. The evaluation techniques conform to standards set by federal agencies. This is an invaluable package for any businessman who has invested in equipment. LIFE CYCLE ANALYSIS features an easy to use data file creation section and provides formatted hardcopy reports for use in presentations or for tax record keeping purposes. When used for generating tax information, this package is tax deductible! Requires 48K. Comes on two diskettes.

Price: $39.95 Diskette

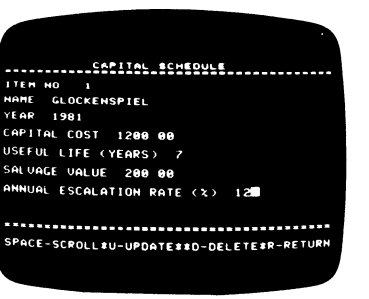
Sample display:

HINT

(North Star BASIC)

NO PROGRAM or OUT OF MEMORY error: Either the program file is empty (unlikely) or you did not use MEMSET to allocate enough memory for the program.

Sample display:



OPTIMAC
(TRS-80 and Apple only)

OPTIMAC is a work-day simulation for machines. Its purpose is to maximize the overall output of interrelated production equipment. The optimization is based on four different machine relations commonly found in agriculture, construction, transportation and industry. A maximum of 12 machines of three different types can be processed in each simulation for a total of 36 machines. Once the relations, machine types and other data has been entered, OPTIMAC will simulate an 8 hour work-day (at 2 minute time-increment intervals), for these conditions and quantities. The resulting simulated work-day is displayed graphically and numerically. A simultaneous graphing option is available in the program. This option is designed to help the user visualize the case being considered. OPTIMAC can also do repetitive simulations to find the best possible combination of machines in an optimization routine for minimizing idle machine time.

Cassette version requires 16K. Diskette version requires 32K.

Price: $39.95 Cassette
$43.95 Diskette

DATEBOOK
(CP/M only)

Here is a datebook software package which is both very effective as well as exceptionally easy to use. You enter the date, from/to, subjects and comments. The date can be anything legal; DATEBOOK contains a perpetual calendar. The from/to can be the hours of the meeting, or can be names (from John Smith to Jim Jones). The subject is your choice (lunch, staff meeting, date, etc.). The comments may be descriptive (e.g., "discussion of the state of product XYZ"). You can freely search and sort on any of the above categories. For example, you may want to look up all memos to Jim Jones, or lunches between 1 and 3 pm ("I remember going to lunch with him between 1 and 3, but what was his name?"). You may easily add information, edit, search for word/phrases and sort on any category. Includes many features which specifically minimize the time spent on date entry. Comes complete with a 32 page manual which clearly describes program operation and sample uses. Requires 48K, printer optional. An ideal package for managers.

Price: $19.95 Diskette
$23.95 Disk

ATARI PROGRAMMING HINTS:

THE MISSING TAB FUNCTION

The ATARI is the only (?) computer running a dialect of BASIC which is missing the conventional TAB(X) function. This has been commented on in the major magazines. The absence of this function is, quite frankly, an annoyance. Perhaps it was an oversight. In any case, there is a simple, but cumbersome "fix".

The ATARI has excellent cursor control, so let's use it. Location 85 (decimal) contains the column location (numbered from 0) of the cursor. Therefore, POKE 85, (X+1) places the cursor in the same position TAB(X) does:

Microsoft TAB(X) example:

```
100 PRINT TAB (20);T;TAB(30);W
```

ATARI "fix":

```
100 POKE 85,21: PRINT T;: POKE 85,31: PRINT W
```

ERRORS IN THE MATH FUNCTIONS

As mentioned elsewhere, there are accuracy problems in the ATARI math functions. The solution is to replace those functions with your own subroutines. A good source for these replacements is BASIC SCIENTIFIC SUBROUTINES by F. R. Ruckdeschel (published by McGraw-Hill). These programs are available through DYNACOMP on cassette and diskette. See the SCIENCE/MATHEMATICS section of this catalog.

DETECTING START, SELECT, AND OPTION

Here is a simple way of detecting which of these keys has

Continued Next Column

been pressed. First, use POKE 53279, 8 (which, incidentally, causes a "click"). This sets location 53279 to 7 (believe it or not). Now you may press SELECT, START, both simultaneously, and so on and find out what was done by PEEKing at 53279.

PEEK 53279 =	1	2	3	4	5	6	7
START	NP	P	NP	P	NP	P	NP
SELECT	P	NP	NP	P	P	NP	NP
OPTION	P	P	P	NP	NP	NP	NP

P = Key Pressed NP = Not Pressed

COMPILER PROGRAMS

Although several compilers have been advertised for the ATARI, we have yet to find one which, for DYNACOMP, is really worth using. Our specifications are simple. We want to write a program in ATARI BASIC using all the features available, and then compile it. We have tried one highly touted compiler which the advertising stated would compile most ATARI programs, save memory and increase speed.

We found that *none* of our programs would compile (partly because all calculations were restricted by the compiler to integers). The resulting program used *more* memory, and it did not run appreciably faster.

If you have found an easy-to-use, not-too-restrictive compiler for ATARI BASIC, let us know so that we can tell the world! Incidentally, for the math-sensitive programs, you should *not* expect an order of magnitude increase in speed in that the compiled version of your program will branch to the same time-consuming functions subroutines as the uncompiled version. Our staff encountered this disappointment once when we converted some BASIC (an interpreter) programs to FORTRAN (a compiler) with the hope of significantly speeding up program execution. It didn't.

PERSONAL FINANCE SYSTEM

(available for all computers)

PFS was demonstrated on CBS network TV!

The PERSONAL FINANCE SYSTEM (PFS) offers the user one of the most complete financial management packages available, allowing the individual or small businessman complete flexibility in maintaining all aspects of financial record-keeping. Depending on configuration, you will be able to store from 300 to 2,000 transactions on each disk.

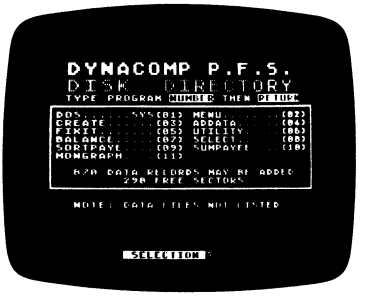
Records are easily entered into the master file and can be accessed by payee or by a user defined code (you may assign up to 26 different categories). PFS will keep track of all tax deductible items, bank deposits, monthly charges, cash payments, etc. It will even automatically deduct any check fees if desired. You will be able to get financial summaries for any category on a per item, monthly, or yearly basis. PFS will print the results in detail or summary form, access the printer if you have one, and even plot the results on a monthly bar graph!

PFS is available on diskette only. The Atari version includes DOS 2.0 on the diskette and utilizes that computer's sound, color, and graphics capabilities. The Atari version requires only 24K to operate; the North Star and other versions only 32K! Comes with an 11-page manual.

DYNACOMP is certain that you will find PFS to be one of your most valuable programs.

Requires 24K.

Price: $39.95 Diskette
$42.45 8" CP/M Disk



Sample display (Atari):

SHOPPING LIST

(Atari, C-64, and TRS-80 only)

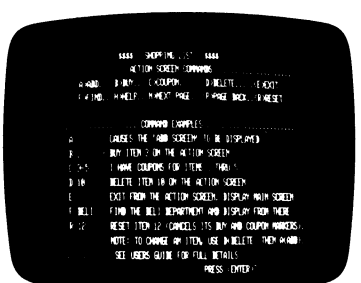
With this program you can carefully plan your next trip to the supermarket day by day in advance. Each day you may enter the item to be purchased and its approximate price. When you are ready to go, SHOPPING LIST will print out an itemized list and the amount of money you need to take.

The TRS-80 version is available only on disk.

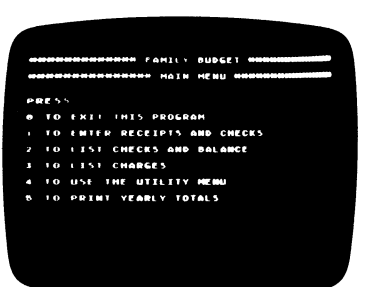
Requires 16K.

Price: $12.95 Cassette
$16.95 Diskette

Sample display (TRS-80):



Sample display (Atari):


FAMILY BUDGET
MAIN MENU
PRESS
0 TO EXIT THIS PROGRAM
1 TO ENTER RECEIPTS AND CHECKS
2 TO LIST CHECKS AND BALANCE
3 TO LIST CHARGES
4 TO USE THE UTILITY MENU
5 TO PRINT YEARLY TOTALS

THE FAMILY BUDGET

(available for TRS-80, Apple and Atari only)

Welcome to the age of electronic record keeping. The Family Budget Program is designed as a two-part electronic home data record-keeping program. Part One, Budget, is used to record expenditures, both cash and credit, and income on a daily basis for the period of one calendar year. Three categories are used to record tax deductible items, namely Interest and Taxes, Medical expenses, and Charitable Donations. Part Two, Charge Accounts, provides a continuous record of all credit transactions. Each program provides options for hardcopy printout of various data. These printout options assume a printer is connected to Port #1 of the Apple.

As you receive it, FAMILY BUDGET is provided with 28 transaction categories:

1. Payments
2. Savings
3. Food
4. Meals
5. Rent
6. Clothes
7. Utilities
8. Laundry
9. Travel
10. Education
11. Insurance
12. Gifts
13. Interest
14. Medical
15. Charity
16. Labor
17. Amusement
18. Auto
19. Cigarettes (Ugh!)
20. Home Furn.
21. B & B
22. Cash
23. Charges
24. Pay
25. Add. Inc.
26. Fed. Tax
27. State Tax
28. Soc. Sec.

You may easily enter, edit, save and recall data, print out selected categories according to transaction period, and much more. FAMILY BUDGET comes with an excellent 17 page instruction manual. Be prepared for that IRS audit!

Requires 16K program memory (Atari version requires 24K).

Price: $34.95 Diskette
$37.45 8" CP/M Disk

ATARI PROGRAMMING HINTS:

NEGATIVE ZERO?

This one has shown up as a bug in two of our programs more than a year after their release. It goes to show that no matter how good the code looks and how well it is tested, a bug can come out of the blue (or beige?).

What is wrong with the following?

```
100 INPUT X
110 Y= +X
120 Z= -X
130 PRINT X,Y,Z
140 GOTO 100
```

This routine works fine unless you input 0. The ATARI does not like to encounter a minus zero. Curiously, you do not get an error message, but instead get a ***very*** strange result. Try it.

The "fix" is cumbersome—you must test to see if X is zero before using -X or add to your algebra:

```
120 Z= -X: IF X=0 THEN Z=0
or
120 Z= 0-X
```

We leave it to the reader to try other examples in which the form "=-X" appears in a statement.

Another curious thing to note is that the ATARI does not seem to balk at carrying a non-numeric value for a numeric variable. Try zero in:

```
100 INPUT X
110 Y= -X
130 Z= Y
140 PRINT X,Y,Z
```

You can imagine how long it might take to back through the code to find the original source of this bug!

LOAN ANALYSIS

(Atari only)

In today's marketplace with sky-high interest rates and several different lending facilities to chose from, it is important to have at your disposal every scrap of information possible in order to make the most intelligent decisions about borrowing. This program is written to aid you in making the best possible choice when it comes time to borrow and to arm you with the facts about interest rates, payment schedules, and amortization of loans. This program will provide you with those options before you sit down with your lending facility.

The program is divided into three parts. Each part is available by making a choice from the menu. The first part allows you to vary the amount of the loan, interest rates, and the life of the loan. The second part gives you the option of determining how much you might save if you pay a little on your loan each month. It will show you the differences in interest paid, amount of total payments, and equity created. The third part will amortize your loan and show you month-by-month how your repayment scheule works and why the cost of borrowing money is as great as it is. LOAN ANALYSIS is a small investment which can save you much.

Requires 16K (cassette), 24K (diskette).

Price: $17.95 cassette
$21.95 diskette

PERSONAL BALANCE SHEET

(CP/M only)

PERSONAL BALANCE SHEET provides an easy way for you to create a statement of your financial position. Besides calculating your total assets (cash, accounts receivable, stocks, bonds, real property, etc.) and liabilities, PBS includes debt/worth, current, and acid test ratios. You can use PBS to forecast changes in your net worth based on changes in your investments and liabilities.

PBS is a well-designed, easy-to-use software package. It comes with a documentation package which offers step by step instructions, a sample data file, program notes and an annotated program listing (in BASIC). PBS outputs data to your normal (LPRINT) printer port. Requires an 80 column printer for detailed balance sheet output.

Price: $29.95 Diskette

HANDICAPPER

(available for all computers)

HANDICAPPER is a handicapping scheme designed for thoroughbred races of lengths 6, 6 1/2, or 7 furlongs. It was designed by a mathematician and has been tested by professional bettors and handicappers. In general, you can expect HANDICAPPER to produce the winning horse about 40% of the time. However, in certain instances, it can be much more accurate.

The information required by the computer is:

1. The length of the race.
2. The length of the horse's previous race.
3. In some cases, the length of the next to last race for the horse.
4. The horse's position at points of call in the previous race.
5. The horse's position at points of call in the next to last race.
6. The type of race today.
7. The type of the previous race.
8. The horse's post position today (determined by his position in the RACING FORM).
9. The horse's post position in his previous race.
10. The number of first and second place finishes for the past two years.
11. The number of starts the past two years.

As you can see, this is the same information used by the professionals! The problem is, what if everyone used HANDICAPPER?

Requires 16K.

Price: $29.95 Cassette
$33.95 Diskette
$36.45 Disk

THE CREDIT RATING BOOSTER
(TRS-80 only)

The next time you shop around for the best possible interest rates on a mortgage, an auto loan or any other type of credit, use THE CREDIT RATING BOOSTER to help stack the odds well in your favor.

Most credit applicants do not realize that there are several factors which can reduce their credit-worthiness rating even if they know themselves to be 100% credit-worthy. Some of these factors are very simple and you should be aware of them in order to present an application which is as favorable as possible. These factors can mean the difference between getting low-priced credit at the most conservative institution in town or being forced to pay higher interest rates elsewhere.

THE CREDIT RATING BOOSTER was designed and written by a data processing consultant to major U.S. banks. It provides a well organized printout, or full screen displays of your up-to-date credit history in a way that is designed to suitably impress a loan officer.

THE CREDIT RATING BOOSTER is very user-friendly and easy to use. Before you apply for your next loan, be sure to have THE CREDIT RATING BOOSTER working for you.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:

THE CREDIT ARRANGER
MAIN SCREEN
(A) DISPLAY/ALTER ACCOUNT INFORMATION
(B) DISPLAY TOTAL DOLLAR AMOUNTS
(C) PRINT CREDIT HISTORY REPORT
(D) WRITE NEW VERSION OF FILE TO DISKETTE
(E) END PROGRAM
(F) ALTER THE NAMES OF ACCOUNT TYPES
YOUR SELECTION?

BUDGET MODEL ANALYZER
(Atari only)

BUDGET MODEL ANALYZER is an easy to use modeling tool that allows a household or small business to gain a much clearer picture of their cash flow situation. It can serve as an excellent "what if" tool that will show what proposed changes in spending rate or income rate will do to an overall budget. It allows you to easily compare, or collectively consider all of your various incomes and expenses, regardless of whether those incomes or expenses occur on a daily, weekly, monthly, or some other regular basis. BUDGET MODEL ANALYZER will show you the net result of your current budget or a proposed budget in graphic and numeric form. Cassette version requires 32K; diskette version requires 40K.

Price: $19.95 Cassette
$23.95 Diskette

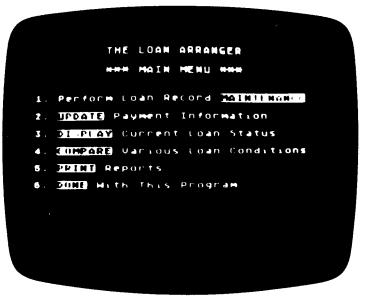
THE LOAN ARRANGER
(Atari only)

THE LOAN ARRANGER is designed to help you keep track of up to 25 personal loans, such as a home mortgage, automobile, education, home improvement, and so on. The program will allow you to monitor the remaining balance of each loan, the number of payments left, and the date of the final payment. You can see and print reports on the current status of all your obligations, and on your year-to-date payments for each. You can also print complete or partial amortization tables for each of your loans. Another feature allows you to combine various terms (principal, interest rates and number of payments) to compare monthly payments and the total interest paid. THE LOAN ARRANGER can be very helpful for short- and long-term budget and tax planning (and is tax deductible!)

Requires 40K, 80 column printer, Atari 810 disk drive.

Price: $19.95 Diskette

Sample display:


THE LOAN ARRANGER
*** MAIN MENU ***
1. Perform Loan Record MAINTENANCE
2. UPDATE Payment Information
3. DISPLAY Current Loan Status
4. COMPARE Various Loan Conditions
5. PRINT Reports
6. DONE With This Program

HOME INSURANCE PROTECTOR
(TRS-80 only)

There are six main reasons why people settle for too little on their home contents insurance claims. It is not unusual for someone to sign an agreement to receive settlement of a claim for $5,000, only to realize weeks later that they should really have asked for $7,000 in order to fully pay for the cost of replacing their lost or damaged items. HOME INSURANCE PROTECTOR safeguards you against the six common pitfalls that can lead to such an unfortunate situation.

HOME INSURANCE PROTECTOR keeps an up to date, easy to maintain inventory of your personal possessions. You can upgrade the value of the entire inventory to reflect inflation, or quickly adjust the values of single items. You can "page" through your inventory examining 11 items per full screen, display dollar totals and print an insurance company report or an owner's full report for safe storage.

HOME INSURANCE PROTECTOR is one of the most user-friendly programs available today. It has extensive error-trapping, full screen menus, multi-data file capability, an on-line "Help" screen, and it prompts you for important evaluation information where necessary. Requires 32K. Printer optional.

Price: $19.95 Diskette

TAX OPTIMIZER

(available for all computers)

TAX OPTIMIZER is a software system designed to evaluate various tax alternatives and to select the most advantageous method for the preparation of an individual Federal Income Tax.

Using TAX OPTIMIZER, you can easily determine the advantages or disadvantages of your projected financial decisions and actions.

Each set of input data is referred to as a scenario. A tax scenario can contain up to five alternatives. Individual scenarios may be saved on disk for future reference. Stored scenarios may be retrieved, modified and recalculated at will. If a printer is available, permanent copies of the tax scenarios can be printed.

What TAX OPTIMIZER does in **internally** calculate your taxes according to the information supplied and the tax rules. Then the **total tax** for each scenario is printed out so that you may choose the best method (e.g. income averaging, married filing separately, etc.) This can be done for a sequence of years so that you may choose the scenario having the overall best tax advantage.

Also note that updating the tax tables can be easily accomplished by the user by typing in table values.

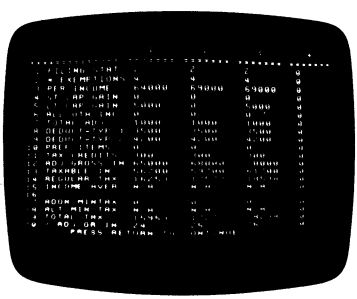
TAX OPTIMIZER is clearly worth more than its purchase price, and even that is deductible!

TAX OPTIMIZER comes complete with 14-page instruction manual.

It requires 16K of program memory (Atari version requires 24K).

Price: $59.95 Diskette
$62.45 on 8" CP/M Disk

Sample display (Osborne):



ATARI PROGRAMMING HINTS:

ARRAYS

DYNACOMP distributes one engineering program (DATA SMOOTHER) which runs in 16K of memory on all of our computers except for the ATARI. We do not offer it for the ATARI because it will not run even in 48K of memory. You can see the reason why from running the following two programs:

a) 100 PRINT FRE(0)

b) 100 DIM A(9)
110 A(0)=0: A(1)=1: A(2)=2: A(3)=3: A(4)=4
120 A(5)=5: A(6)=6: A(7)=7: A(8)=8: A(9)=9:
130 PRINT FRE(0)

Continued Next Column

In a 48K ATARI 800 (a) gives 32268 bytes free and (b) gives 31922 bytes free. Therefore, it costs 302 bytes to dimension and define ten array elements—or roughly 30 bytes per element. Clearly, arrays eat up memory quickly!

LOCK-UP UPON RESET

Here is a poor man's way to partially protect your cassette programs. Using POKE 9, 255 will lock up the keyboard if RESET is pushed.

DISABLE BREAK KEY

To disable the BREAK key, do the following two pokes:

POKE 16, 112
POKE 53774, 112

A REAL-TIME CLOCK

You can PEEK at locations 18, 19, and 20 to count time in 1/60th second steps. Location 20 goes from 0 to 255 in steps of 1 for every 1/60th second. The next step after 255 is 0, and location 19 increments 1. A similar relationship exists between locations 19 and 18. POKE these with zeroes and count time!

Example

```
T= INT((PEEK(20)+256*PEEK(19)
                +65536*PEEK(18))/160)
```

T measures elapsed seconds

KILL THE BEEP

POKE 65, 0

LEFT- AND RIGHT-HAND MARGINS

When the ATARI is first booted, it comes up with default margins in columns 2 (left) and 39 (right). You can changes these to X and Y as follows:

POKE 82,X
POKE 83,Y

WHERE'S THE CURSOR?

Would you like to know where the cursor is? Would you like to place it where you want?

The cursor location is measured from the upper-left of the screen (0,0). the row and column positions of the cursor are stored in locations 84 and 85:

ROW= PEEK(84)
COLUMN= PEEK(85)

You can also POKE those locations so as to position the cursor.

HISCORE DATABASE
(Atari only)

HSD is designed to maintain the game score records for you and your friends. You may display, print (to a printer), update, sort (fast!) and generally maintain game scores. An excellent present for that avid game player! Requires 16K (cassette), 24K (diskette). A 40K disk system can store over 400 records.

Price: $12.95 Cassette
$16.95 Diskette

Sample display:

HINT
(all computers)

You'll like our low prices on blank disks, diskettes, and cassettes. They're shown on pages 98 and 99 of this catalog.

MAIL MASTER
(Atari diskette only)

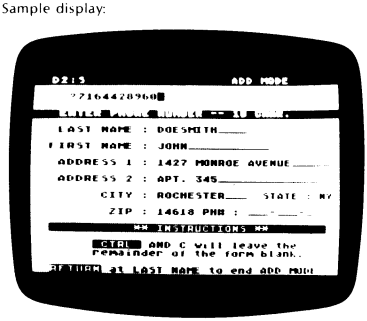
MAIL MASTER is a general purpose mailing list and telephone number utility program. It provides a wide variety of ways in which data can be stored and retrieved. Novice users can quickly and easily learn to operate MAIL MASTER thanks to the clearly written on-screen prompts which are provided and the clear layout of information on the screen. MAIL MASTER is largely written in BASIC so that it may be customized by the sophisticated computerist. However, it also employs fast machine language routines in time-sensitive areas, such as sorting.

MAIL MASTER provides eight labelled fields for each mail list entry. They are: LAST NAME, FIRST NAME, ADDRESS 1, ADDRESS 2, CITY, STATE, ZIP and PHONE NUMBER. ADDRESS 2 may be left blank, or optionally used to store information (what was purchased, etc.) which can (optionally) be printed out.

The file functions available are sorting by name or zip code; printing mail labels 1, 2 or 3-up; build, search and edit. These features combine to make MAIL MASTER a versatile mini-data management program unmatched in power and ease of use.

Price: $39.95 Diskette

Sample display:


ADD MODE
LAST NAME : DOESMITH
FIRST NAME : JOHN
ADDRESS 1 : 1427 MONROE AVENUE
ADDRESS 2 : APT. 345
CITY : ROCHESTER
STATE
ZIP : 14618
** INSTRUCTIONS **
CTRL AND C will leave the remainder of the form blank.

GOLFER'S DATABASE
(Atari only)

If you play golf or plan to, GOLFER'S DATABASE is for you. Designed by an engineer with a two handicap, this very easy-to-use program (comes with a 20 page manual that's rarely needed) is designed to keep track of your golf scores, number of putts, greens hit, courses played, course ratings, course and weather conditions plus other important scoring statistics.

As a data base you will be able to add, edit, delete, search and sort your records as desired. A specialized data file is generated by the data base which is used to analyze various types of handicaps, stroke averages and scoring characteristics.

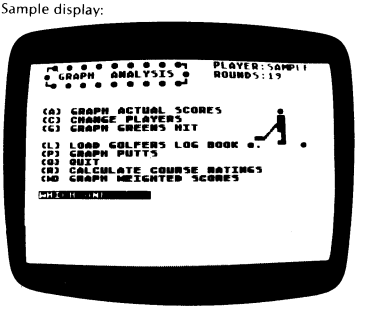
All members of your family and/or golf league can have separate data files, each of which can be reviewed and analyzed individually. If you have a printer, all data records and analyzed output can be printed. Included in the data base is a graphing program which will plot and graph all your scoring characteristics.

The GOLFER'S DATABASE will help you improve your golf game by allowing you to easily organize and analyze your own personal scoring characteristics, thereby allowing you to better utilize your practice time.

Requires 32K.

Price: $29.95 Diskette

Sample display:



DATA RETRIEVAL SYSTEM (DRS)

(CP/M and Atari only)

DRS is a fast cross-indexing system which may be used to store and retrieve information according to keywords. Although DRS was originally set up to index journal articles, it can equally well be used to cross-index record collections, recipe files, etc.

In the CP/M version, each article entry can have up to six keywords. By searching on a particular keyword, all articles (entries) involving that keyword will be displayed. The article description is limited to 75 characters. The CP/M version of DRS is written in machine language and is designed to be **very** fast.

In the Atari version you can search on keywords in the title (keywords can be appended to the title). The length of the article description is unlimited.

Both versions encode the source (e.g., the journal) to save disk/diskette space and provide rapid data access. Both versions are also very user-friendly and come with complete manuals. Requires 32K, one disk drive.

Price: $29.95 Diskette
$32.45 Disk

Not available for IBM PC.

FINDIT

(North Star only)

Use FINDIT to quickly locate: address, phone, birthday, anniversary, and appointment dates for your friends; address, phone, balance owed, appointment dates for commercial contacts; descriptive information for reference entries which may be accessed with one, two or three keywords. Each personal keyword (for example, a last name) accesses a record in the data base which contains name, address, phone and birthdate information, as well as anniversary dates, appointment dates and comments. Each commercial keyword accesses one to five records each of which contains business name, address, phone, balance owed, appointment dates and comments.

A list of the available procedures is shown below:

1 - FIND PERSONAL ENTRY
2 - FIND COMMERCIAL ENTRY
3 - FIND REFERENCE ENTRY
4 - ADD NEW ENTRY
5 - DELETE AN ENTRY
6 - ADD KEYWORD
7 - DELETE KEYWORD
8 - DISPLAY BIRTHDAYS/ANNIVERSARIES
9 - DISPLAY APPOINTMENTS
10 - DISPLAY KEYWORDS
11 - CHANGE AN ENTRY
12 - INITIALIZE FILES
13 - LIST ALL PERSONAL/COMMERCIAL NAMES/ADDRESSES

Menu selections 1, 2, and 3 locate and display machine records.

Menu selection 8 will ask you for start and end months and will display all personal records with matching birthday or anniversary date.

Menu selection 13 will display the names and addresses of all personal and commercial records.

The other selections provide convenient entry and maintenance of the file.

FINDIT is certainly a useful information retrieval program for the computerist attempting to stay organized in a complicated world.

Requires 16K program memory space.

Price: $19.95 Diskette

DYNABASE DATABASE PROGRAM

(TRS-80 only)

The DYNABASE DATABASE PROGRAM (DDP) is an easy-to-use database package which may be configured by the user. The program utilizes sequential access techniques to eliminate the requirements of setting limits on the size of any field, and to make the most efficient use of available disk space. The program functions have been structured around the file access method to provide the least amount of delay.

In operation, file size is limited only by available disk space, and there are no artificial restrictions on the length of text the user may enter into any field of a record. DDP may be configured to contain up to 10 text fields plus up to 10 numeric fields. Each field is labelled by the user.

A wide range of options is provided for printing out the database during the print, sort, search, and evaluation operations. Eleven "canned" printout formats are provided, along with a custom printout set-up option. The custom printout function allows the user to set up a customized printout format utilizing up to 255 columns. The set-up procedure also supports control code sequences to select printer density, font, etc. Once established a printout configuration may be saved to disk for future use as a printout configuration source. Printout routines include page control, page numbering, dating, source file name, and user heading.

The sort command allows the user to sort the data file according to any text or numeric field. The sort may be written to a target file, or may be used for print out.

The search command provides a wide variety of options for searching the data file. Results of the search may be sent to a target file, or the search may be printed out. The user can set up the "match" conditions (3 text, 2 numeric), or may select a range search. Any number of fields may be selected for searching, and up to 10 keywords may be entered for matching. Both the text and numeric fields are searchable.

A file evaluation command provides a math capability for the numeric fields of a file. Addition, subtraction, multiplication, and division are supported. (Beginning to sound like Visicale™?) The user may operate on and store the results in any of the numeric fields of the file. A constant may be substituted for one of the operands, and an option to totalize all the resultants of the file is also provided. The standard add, subtract, multiply and divide functions are provided, along with the trigonometric, logorithmic and exponential operators. DDP also permits bargraphs to be printed, as well as mailing labels (e.g., 1-up).

DDP is user-friendly. All input data is requested by name, and data verification is required before the data is written to disk. The program is written to reject out-of-range or nonsense inputs, and error-trapping is provided to prevent data loss due to system errors. Easy to use editing features are also provided.

Price: $49.95 Diskette

THE HOME INSURANCE INVENTORY
(TRS-80 only)

THE HOME INSURANCE INVENTORY is an easy-to-use inventory program which is specially designed for valuable collections and household inventory records. All program commands are in the form of menu selections, making program operation very easy. Additionally, all user data entries are prompted by name. Full editing capability is provided, as well as commands to search and sort the file. Two printout formats are provided, and output may be sent to the printer as well as the CRT screen. Additional commands provide for generating a total valuation of the file, and for automatic updating of the quantity and value of each entry, making record maintainence simple. Requires 48K.

Price: $19.95 Diskette

Sample display:

BOWLER'S DATABASE
(Atari only)

BOWLER'S DATABASE is a very friendly, easy-to-use program for keeping track of your bowling scores throughout the season. You can create files for each bowler of your family or each member of your league. A file can hold scores for 99 (or more) weeks. Summary and detailed reports are automatically displayed on your TV screen or printer. These reports contain your highest, lowest and average scores bowled in the first, second and third games. They also show your highest, lowest and average three-game series and your overall game average. The detailed report lists all your game and individual series totals by week.

BOWLER'S DATABASE gives you permanent, detailed records of your bowling performance. It makes comparisons from one season to the next, or from one league to another a simple task.

Requires 16K (cassette), 24K (diskette). Printer optional.

Price: $12.95 Cassette
$16.95 Diskette

DESKTOP BIBLIOGRAPHY
(TRS-80 only)

DESKTOP BIBLIOGRAPHY is designed to allow the user to easily and efficiently construct a bibliographic reference system. For example, engineers, managers, executives, professionals and similar people might use DESKTOP BIBLIOGRAPHY to create a reference file of magazine articles. Writers might use DESKTOP BIBLIOGRAPHY during the research phase of a book to create an index of their work by inserting entries for each page or section. The search and sort commands provide a variety of useful, flexible, fast and powerful methods of accessing this data. For example, keyword searches may be made by category or globally, and they are *fast*! Reference size is limited only by available disk space. Editing is very convenient.

This program is designed for a TRS-80 Model I or Model III disk system with either 32K or 48K of RAM. When run, the program will automatically configure itself to the available memory. A printer is supported.

Price: $19.95 Diskette

Sample display:

COLLECTORS PARADISE
(TRS-80 only)

Three collectors inventory programs in one:

- Coin collection
- Stamp collection
- Rare collectibles

Keeps a complete inventory of all of your valuable collections. Quickly adjusts the current value of items to keep your insurance and personal records up to date. You can add, delete or change items as you page through your inventory looking at 11 items per full screen.

COLLECTORS PARADISE is very user-friendly and easy to use. It provides you with the total dollar value and price paid for each collection, plus the percentage appreciation in value. Optional printed report gives full details of all items for safe storage, plus the total dollar value of your collections. Requires 32K. Printer optional.

Price: $19.95 Diskette

DATA*AID
(Atari only)

With DATA*AID you store, organize, reorganize, and retrieve information of your choice in a form which is useful and meaningful to you. All this is accomplished without using "computereze-type" prompts; you do not need to know programming to use DATA*AID. All you need is a collection of data (information) on a given subject which you wish to store. Use it for:

Household goods inventory
Stereo tapes or records catalog
Bowling scores
Stamp or coin collections
Little League statistics
Recipe locator
Address book
Birthday/anniversary book
Expense records
Gift list (size, style, color preferences)
Anything you want

Comes on two diskettes. Requires 48K, one disk drive. Printer optional.

Price: $39.95 (two Diskettes)

TOP AND BOTTOM OF MEMORY

The position of the top of memory (as far as the operating system knows) is stored in locations 741 and 742. The corresponding position of the bottom of memory is stored in 743 and 744.

By manipulating MEMTOP, you can put aside some memory for your own use. For example, you might want to pass values between chained programs by POKEing them into the reserved memory area. In our VALDEZ program, a 64K *bit* map is stored this way.

CHARACTER MODE REGISTER (UPSIDE DOWN?)

Location 755 contains what is called the character mode register. You can poke values into this register to get some very interesting printed effects.

POKE VALUE	EFFECT
0	Normal Inverse
1	Blank Inverse
2	Normal
3	Solid Inverse
4	Normal Inverse Upside Down
5	Blank Inverse Upside Down
6	Normal Upside Down
7	Solid Inverse Upside Down

ATARI PROGRAMMING HINTS:

STICK VALUES

There are four joystick ports which can be used on the ATARI. By examining certain locations in memory, you can determine the positions of each stick. These positions are coded as shown below:

```
          14
      10      6
  11      15      7
      9       5
          13
```

The locations to be examined are:

STICK NUMBER	LOCATION
One	632
Two	633
Three	634
Four	635

For example, to get stick position X for Stick #1:

```
X= PEEK(632)
```

The triggers may also be checked with PEEKs:

TRIGGER NUMBER	LOCATION
One	644
Two	645
Three	646
Four	647

0= Pressed, 1= Not Pressed

HAS A KEY BEEN PRESSED?

How often have you seen "PRESS ANY KEY TO CONTINUE"? One way of checking to see if a key has been pressed is to look at location 753:

0 = No key pressed
3 = Any key pressed

SENDING THE SCREEN TO THE PRINTER

Here is some black magic. Do the following POKES and the screen output will go to the printer:

```
POKE 838,166
POKE 839,238
```

To get back to the screen:

```
POKE 838,163
POKE 839,246
```

This seems to be meant for the parallel-port printer. Also, the printer format will not be the same as the screen format if you used the POKE replacement for the missing TAB function (see THE MISSING TAB FUNCTION in another part of this catalog).

FASTER DISK ACCESS

If you have a *very* reliable disk drive and good diskettes and like to live dangerously, you can turn *off* the disk read after write verify. This greatly increases disk access, but be careful!

Turn off verify: POKE 1913,80
Turn on verify: POKE 1913,87 (default)

CASSETTE RECORDER MOTOR TURN-ON/TURN-OFF

Turn motor on: POKE 54018,52
Turn motor off: POKE 54018,60

This can be useful if you have a music track on the tape. Some of the earlier ATARI demos used this feature.

DYNACOMP is one of the few large microcomputer software companies which is committed to the development of a broad line of statistics and engineering software. Our objective is to provide high quality and useful products at very reasonable prices. Our success in this is attested to by our many repeat customers.

Although the majority of our scientific software has been developed in-house, we do publish the work of outside authors. If you have a good program which you believe to be of use to other professionals, please consider DYNACOMP as a potential publisher.

STATSORT

(TRS-80 only)

STATSORT is a very effective utility program for dealing with data bases. With STATSORT you may build and edit data files having multiple fields of numeric and alphanumeric information. You may sort this data on any field, merge files, and generally manipulate the data. The data may at any time be printed out in paginated form with table headings and page numbering. In addition, any data field may be analysed for its descriptive statistics (e.g., min, max, mean, variances, standard deviation). A generally useful package!

Requires 16K.

Price: $39.95 Cassette
$43.95 Diskette

Sample display:

REGRESSION I

(available for all computers)

REGRESSION I is a complete and coordinated regression curve fitting package for the analysis of linear and non-linear, one-dimensional data. It is based on various subroutines and techniques presented in Volumes 1 and 2 of BASIC Scientific Subroutines (by F. Ruckdeschel). REGRESSION I provides many of the facilities available on large FORTRAN-speaking machines and more. However, unlike many of the FORTRAN equivalents, there is no confusion as to the input/output variable formats, and the software is very easy to use. In addition, the analysis is interactive, thereby permitting the user considerable freedom in experimenting with fitting functions and orders of approximation. Also, a special algorithm is employed to determine the coefficients which has round-off error properties much superior to the matrix algorithms commonly used. This greatly reduces the need to perform the calculations in double precision or pre-process the data.

The features of REGRESSION I include:

1. Easy data entry and editing.
2. Automatic data sorting and plotting (of both the data and fitted curves).
3. Fast and accurate regression.
4. A choice of many fitting functions, including forms supplied by the user.
5. Analysis of the standard error of the derived coefficients and the correlation coefficient.
6. Data storage and retrieval.
7. Plot of residuals.

Once the regression has been performed, the user may immediately repeat the analysis using the same data set (with editing if desired) and test other functional forms.

REGRESSION I is not only a powerful statistical tool for use in the engineering, business and social sciences, it is educational as well. Because the program presents the regressed coefficients as well as their estimated error bounds, the student may learn by experience how much credence to place on the derived coefficients. In addition, he/she may also get a feel for the general types of fit associated with various levels of correlation. It is very easy for the inexperienced experimenter to be tricked by regression results, especially those having high R^2 values. REGRESSION I is designed to guard against this.

Accompanying REGRESSION I is a well-written 12 page users manual.

Requires 16K of program memory (Atari version requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample display (Atari):

REGRESSION II (PARAFIT)

(available for all computers)

PARAFIT is a parametric least squares regression program designed specifically for the determination of the non-linear coefficients in complicated mathematical expressions. This is to be contrasted with the linear polynomial coefficients calculated by REGRESSION I.

A typical problem suited for analysis by PARAFIT might be the following. Information has been collected on the failure rate of a particular product. This information is in the form of the normalized fraction of items which failed per unit time interval after production. The times at which these data were collected may not be equally spaced such that the set consists of many (f_i, t_i) pairs. The functional form assumed is the Weibull distribution.

$$f(t) = \left[\frac{vt^{(v-1)}}{u^v}\right] \exp\left[-(t/u)^v\right]$$

Given the f_i, t_i) data pairs, what are the least squares regression values for the parameters u and v?

PARAFIT may be used to solve this problem. The user inserts the functional form as a BASIC program statement and runs PARAFIT. The program employs a special form of modified steepest descent to interactively determine the unknown parameters.

Features included in PARAFIT are automatic plotting of the data fitted function and residuals; cassette (or diskette) data saving and loading; and data file building/editing.

PARAFIT was designed to be easy to use as well as effective, and is an excellent companion to REGRESSION I. PARAFIT is supplied with a comprehensive 14 page manual which fully describes the program's use.

Requires 16K of program memory (Atari version requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

MULTILINEAR REGRESSION

(available for all computers)

This is the third program in the DYNACOMP statistics series. Whereas REGRESSION I and REGRESSION II (PARAFIT) are designed for analyzing bivariate data, MLR is capable of treating multi-variate situations with no limit (other than available computer memory) on the number of dimensions. The general form of the equation fitted will be $Y = af_1(X_1) + bf_2(X_2) + cf_3(X_3) +$ etc. The variables are the X_i. The regressed coefficients are a, b, c, etc. The functional forms, $f_i(X_1)$, may be virtually anything. MLR automatically offers a choice of nine mathematical forms, including the logarithm and exponential, as well as the simple default $f_1(X_1) = X_1$. In addition, the user may replace the default form with his own function. These choices can be independently made for each dimension.

The data input to MLR may be either from the keyboard or from cassette/disk files. Data may be loaded, saved, added to, deleted, and generally edited using the convenient data manipulation procedures provided. The number of data points is limited only by the computer memory available.

The outputs from MLR are the regression coefficients and the standard error associated with these coefficients. Such error estimates are very useful, but often neglected by regression programs. MLR also supplies the standard error of the estimate for the fit and the correlation coefficient. Finally, MLR offers the opportunity to use the regressed equation to calculate values along the fitted hyper-curve.

Operationally, MLR employs two distinctly different methods for finding the regression coefficients. The first method uses matrix algebra techniques and is quite fast. The second method utilizes a very stable form of steepest descent optimization. This second approach is much slower in execution, but requires significantly less computer memory and can handle "ill-conditioned" situations with high accuracy. Also, with this technique, the fit is made one dimension at a time, and the coefficients and standard error of the fit are displayed at each step.

MLR is supplied with a 16 page manual which carefully outlines program operation.

Requires at least 16K of program memory (Atari version requires at least 24K).

Price: $24.95 Cassette
$28.95 Diskette
$31.45 8" CP/M Disk

COLLECTIONS

DYNACOMP offers reduced prices on the following collection:

REGRESSION I, REGRESSION II and MULTI-LINEAR REGRESSION are available for:

$51.95 (3 Cassettes)
$63.95 (3 Diskettes)
$69.95 (3 8" CP/M Disks)

STATTEST

(available for all computers)

STATTEST performs statistical tests of hypotheses and includes t-tests, chi-square tests, and F-tests as well as simple regression and a random number generator.

Data can be entered under program control or from tape or disk. Any external file which already contains data in the simple format required may also be used. Once the data is loaded, it may be edited by the program's own data manipulation routine. Data can be changed, added, deleted, or any combination thereof. Data can also be listed upon entry and after editing if desired.

When the data is ready, descriptive statistics are calculated, the hypothesis to be tested is stated, and the test is performed. Previously calculated statistics may be optionally used instead of data entry.

The 19 page instruction book is structured so as to allow the experienced statistician to make successful use of the program immediately as well as to assist the new user in the proper application of these powerful statistical tools. Reference to the theory section of the documentation should be made if statistical hypothesis testing itself is not fully understood.

STATTEST is ideal for the experienced statistician as well as the occasional user.

Tape version will run in a 16K Model I or Model III.

Price: $29.95 Cassette
$33.95 Diskette
$36.45 CP/M Disk

ANALYSIS OF VARIANCE

ANOVA
(not available for PET or on Atari Cassette)

ANOVA is actually four programs in one. Each program performs a specific task matched to the designed experiment under analysis.

1. A one-way ANOVA produces the treatment sum of square, mean square, and F ratio along with the error mean square. This algorithm accepts unequal numbers of replicates per treatment level and unlimited numbers of treatment levels and replicates.
2. Two-way ANOVA performs an analysis of either fixed or random factors with equal numbers of replicates (repeat measurements) per cell. There is no practical limit on the number of levels or replicates. Sums of squares and mean squares are printed for both factors and the interaction as well as the error sum of squares and all F ratios.
3. The "N-way" (for N up to 5 factors) will accept up to 4 levels per factor or any combination of levels not to exceed 1024 treatment combinations in 16K of core. Sums of squares and mean squares for all main effects and up to 3 factor interactions are computed. The appropriate (residual or pure error) mean square is used to compute the F ratios.
4. YATES analysis computes the mean square and half effect for two level factorial and fractional factorial experiments. All main effects and interactions are computed and printed out.

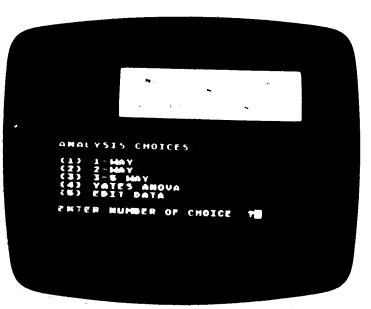
In all programs except the YATES, the means for the main factors are printed. Unlike many large computers FORTRAN-based ANOVA systems, data entry is interactive and at the user's option. A data file may be created for editing and re-entry at a later time.

Documentation (15 pages) includes a guide to experimental design and methods to compute components of variance for the random model ANOVA. Examples and test data are provided to allow the user to practice with known information before applying the programs to their own data.

Requires 16K program memory space.

Price: $39.95 Cassette
Price: $39.95 Cassette
$43.95 Diskette
$46.45 8" CP/M Disk

Sample display (Atari):



NUMBERKRUNCHER I

(TRS-80 only)

NUMBERKRUNCHER is an extremely powerful data processing package. Because NUMBERKRUNCHER is actually a collection of programs (version 2.0), it can perform its operations in systems as small as 16K. In terms of data input/output, NUMBERKRUNCHER has the following features:

- In-memory data base common to all program modules
- Up to 255 data sets, each with a 6 character name, within the data base
- Complete data editing facilities
- Storage I/O and printer support for data bases and data sets

Also provided is a module to perform multiple linear correlation and regression with provisions for printing the variance/covariance matrix. Included is the ability to predict, as well as examine the residuals. These statistical analysis procedures are supported by a graphics module which draws both scatter diagrams as well as histograms. Axis labelling is available, as well as cummulative distribution plotting. Another feature, and one which is unique, is the transform module. With this subprogram you may transform your data in any of 47 ways (one being a user-defined transformation). These transforms include addition/subtraction of two data sets, trigonometric and logarithmic transformations; standard deviation normalization; lead/lag moving average; linear combinations; and many more.

These and other features are fully described in the extensive (55 pages) documentation package supplied with NUMBERKRUNCHER. If you deal with numbers and have a TRS-80, NUMBERKRUNCHER is a must!

Version 2.0 consists of several separate programs on cassette and requires only 16K of memory. Version 2.1 is composed of a single program and needs 32K to operate. State which version you wish.

Price: $69.95 Cassette
$73.95 Diskette

NUMBERKRUNCHER II

(TRS-80 only)

This is the second software package in the NUMBERKRUNCHER series. NUMBERKRUNCHER II contains all the excellent data creation, storage, manipulation and editing features of NUMBERKRUNCHER I, as well as nice bar graph displays.

There are two types of statistical calculations performed by this program. The first is a comprehensive calculation of summary statistics, including ten simple statistics and a Kolmogorov goodness-of-fit test. The simple statistics are the mean, median, max., min., midrange, sample standard deviation, variance, skewness, kurtosis and Durbin-Watson statistic.

The second main set of calcuations involve the auto- and partial-correlations. Included are the differencing transform and the Box-Pierce statistic.

NUMBERKRUNCHER II is supported by an excellent 43 page instruction manual. It is available in both cassette and diskette; both 16K and 32K cassette versions are available (state which when ordering).

Price: $69.95 Cassette
$73.95 Diskette

BASIC STATISTICAL SUBROUTINES
VOLUME I
(Available for all computers)

BASIC STATISTICAL SUBROUTINES, Volume I, is a collection of non-parametric statistics routines keyed to the text "Non-Parametric Statistics for the Behavioral Sciences" by Sidney Siegal (McGraw-Hill). The routines are written in BASIC and can all be called from an easy-to-use menu. Full facilities for data storage, retrieval and editing are also provided. Comes with a 100-plus page instruction book. The subjects covered are:

- Binomial Test
- Chi Square One Sample
- Kolmogorov-Smirnov One Sample
- One Sample Runs Test
- McNemar Test
- Sign Test
- Wilcoxon Matched Pairs Signed Ranks Test
- Walsh Test
- Randomization Test for Matched Pairs
- Fisher Exact Probability Test
- Fisher-Tocher Test
- Chi Test for Two Independent Samples - NxN Chi
- Yates 2x2 Chi
- Median Test
- Mann-Whitney U Test
- Kolmogorov-Smirnov Two Sample Test
- Wald-Wolfowitz Runs Test
- Moses Test of Extreme Reactions
- Randomization Test for 2 Independent Samples
- Cochran Q Test
- Friedman Two-Way Anova by Ranks
- NxN Chi (Chi Test for 2 Independent Samples)
- Extended Median Test
- Kruskal-Wallis Anova
- Contingency Coefficient C
- Spearman Rank Correlation Coefficient
- Kendall Rank Correlation Coefficient
- Kendall Partial Rank Correlation Coefficient
- Kendall Coefficient of Concordance

Requires 32K, one disk
Price: $99.95

REGRESSION ANALYSIS
(Commodore 64 diskette only)

REGRESSION ANALYSIS is a multilinear regression package designed specifically for the Commodore 64 computer. It not only calculates the regression fit, but also provides fitted Y values (for given inputs), residuals, residual plots, scattergrams, variable transformations, variable naming (a very useful feature when dealing with many dimensions and several transformations), standard error of the fits and coefficients, the T-statistic, the F-statistic, the Durbin-Watson statistic, ANOVA tables, correlation matrices and more. The manual (23 pages) is clearly written and contains step-by-step instructions and examples on how to use the package. This is the best integrated and most complete multilinear regression package available for the Commodore. Printers are supported, but are not necessary.

Price: $39.95 Diskette

DATA SMOOTHER
(not available for the Atari)

This package provides the user with a fast and easy means to least-squares smooth equally spaced data and plot the results. Any size data set may be treated within the memory limits of your machine. The variation in each data point is smoothed according to the weighted average of points surrounding it. The averaging span is 3 to 25 points. The order of the local smoothing is linear to quintic (first to fifth degree polynomial). Also calculated are the smoothed first and second derivatives of the data at each point.

The width of the plot is user-controlled. The software automatically considers the printer width chosen and number of data points to produce a graph having a good aspect ratio.

This program is very useful for smoothing out day-to-day stock market fluctuations in order to determine underlying trends. It is also beneficial to the business man in planning inventory based on varying sales volume. The scientist and engineer may apply the smoothing software to noisy data sets. Communications engineers can apply it to incoming data as a "digital filter."

DATA SMOOTHER is extremely well documented in the accompanying 38 page manual which describes both the theory behind the program, as well as its use.

Requires 16K. Price: $19.95 Cassette
$23.95 Diskette
$26.95 8" CP/M Disk

STATISTICAL SAMPLE PLANNER
(Apple only)

SSP will be of most value to persons who apply sampling techniques to market research, promotional efforts, quality control or other problems involving random sampling of completely independent units. It can be used to develop sample designs for:

1. Distributing consumer preference questionnaires to persons residing in a large geographic area. (Strata might be defined according to rural/urban, high/medium/low socioeconomic status, census tract, etc.)

2. Collecting particular kinds of business economic data from firms throughout the country that are engaged in a given industry. (Strata might be defined according to firm size, location, etc.)

3. Gathering product quality data from assembly plants in various areas or at various times.

4. Obtaining information (by phone or mail) about certain political attitudes of voters throughout the country. (Strata might be defined according to sex, age, party affiliation, census tract, etc.)

5. Distributing new product samples or literature to members of a defined market. (In this case, one would not sample to collect information but to ensure cost effective representation of the entire market having known parameters – e.g., age, sex, income, location)

SSP also includes a cost optimizer with which you can specify the testing price for each sample according to group. The program will then try to meet testing reliability criteria and minimize the total test cost. Requires 48K.

Price: $39.95

MULTIPLE REGRESSION AND MULTIPLE/PARTIAL CORRELATION

(Apple only)

MULTIPLE REGRESSION AND MULTIPLE/PARTIAL CORRELATION was designed with the statistician in mind, and is reminiscent of the statistical routines provided on the large mainframes. First you may build and edit files with the options of changing data, adding data, increasing/decreasing the number of variables, increasing/decreasing the number of individuals and shuffling variables or individuals. These data may be saved or recalled from disk (the same file format as used in PRINCIPAL COMPONENTS AND FACTOR ANALYSIS). Then you have the choice of running *stepped* regression or multiple regression with partial correlation. The stepped regression examines the variables one at a time, choosing in turn the one which explains the most residual variation. For stepwise regression you are provided with the regression equation, standard errors of the coefficients, regression analysis of variance, and the correlation matrix. For multiple regression (without steps) you may also perform partial correlation with respect to any given variable, and the regression will be done with and without that variable.

All the functions are menu driven and the user prompts are simple and straight forward. The disk data file format is simple, making is easy to convert your current data files into a format acceptable to MULTIPLE REGRESSION AND MULTIPLE/PARTIAL CORRELATION.

Price: $39.95 Diskette

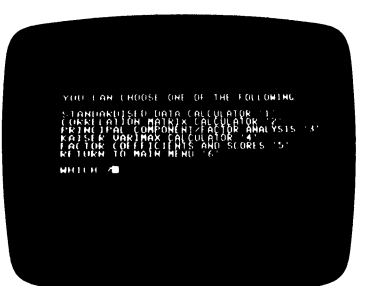
PRINCIPAL COMPONENT AND FACTOR ANALYSIS

(Apple only)

PCFA is a menu-driven collection of subprograms with which you may enter and edit data and perform various calculations. For example, you may compute correlation matrices, standardize your data, calculate principal components and analyse factors, rotate your data using Kaiser's varimax method, and determine factor score coefficients and factor scores. In the principal component analysis and varimax rotation you can specify the number of decimal places accuracy required. You may also conveniently alter your raw data by increasing or decreasing the number of variables or "individuals", as well as shuffle both the variables and individuals. All in all, PCFA is a powerful multivariate analysis package. (*Note:* Although PCFA does the calculations, it is left to the user to evaluate the results. Therefore some familiarity with the subject is required: references are given).

Requires 48K. A printer is supported.

Sample display: Price: $49.95 Diskette


YOU CAN CHOOSE ONE OF THE FOLLOWING
STANDARDISED DATA CALCULATOR "1"
CORRELATION MATRIX CALCULATOR "2"
PRINCIPAL COMPONENT/FACTOR ANALYSIS "3"
KAISER VARIMAX CALCULATOR "4"
FACTOR COEFFICIENTS AND SCORES "5"
RETURN TO MAIN MENU "6"
WHICH ?

HINT

(Commodore cassettes)

Commodore tapes usually load very reliably. However, bad loads do occur. After loading, list the program. If you see a string of "pi" symbols, try loading again.

DISKETTE RECOMMENDATIONS

We have noticed that some brands of diskettes work better than others, seemingly independent of the manufacturer's advertising or pricing (whether they are guaranteed for 90 days, one year, or five years apparently makes no difference in the failure rate). All we can say is that DYNACOMP uses (and sells) only those diskettes which it has found to be most reliable, given some cost constraints. There are some brands which are very high quality and very expensive, but the difference in perceived reliability may not be worth the difference in price.

However, we *do not* recommend that single-sided diskettes be used (in single-sided drives) on the second side by cutting an extra notch. Although many people have done this with some success, they are taking a chance. The problem is *not* "print through"; the diskette is more than thick enough to prevent that. The problem *is not* using a side that has not been verified; you can do that verification yourself. The problem *is* the direction of disk rotation. When you remove the diskette and flip it over, you reverse the direction of rotation. There two things wrong with doing this.

First, the diskettes are polished by the manufacturer in one direction, the direction used in your drive in the normal mode. When the diskette is flipped, it runs the opposite way. Consider your hand to be the head, and a cat to be the diskette. When you brush the cat one way, your hand glides over the fur smoothly. When you brush it in the opposite direction, the fur fluffs up and there is more resistance. Simply put, you run the danger of shortening the life of the "good side" of your diskette, as well as increasing head abrasion.

Second, the inside of the diskette contains a porous liner which picks up and traps dirt. Flipping the disk over and running it "backwards" may dislodge some of the debris, which may pass under the head or stick to it.

Therefore, although this is an unpopular view, DYNACOMP recommends that you do not try to save money by using the back side of the diskettes in single-sided disk drives. Diskettes are inexpensive enough (see DYNACOMP's prices!) that the risk is not worth the anticipated savings.

AUTOBOOTING AN ATARI DISKETTE

We sell a program — TURNKEY — which does this.

FOURIER ANALYZER

(available for all computers)

FOURIER ANALYZER is a scientific program which can be applied to examine the frequency spectrum characteristics of defined duration signals, such as groups of pulses. The user inputs a data set which is Fourier transformed into the frequency space descriptors of amplitude and phase. The amplitude and phase results are displayed in tabular form. The input data and calculated results may also be plotted at the user's option.

Shown below are plotting examples in which the input data represented a square wave shifted off the origin. The amplitude plot clearly shows the characteristic "sinc" function form. The phase plot shows the expected discrete phase changes associated with the "sinc" function superposed on the linear phase change expected from the Shifting Theorem.

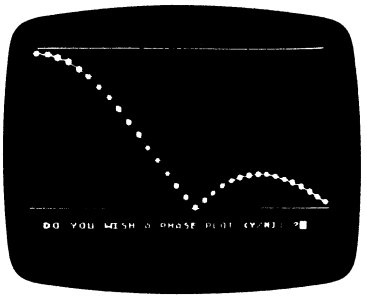
The input data set is limited in extent only by the memory size of the host computer, and is not restricted to equally spaced values.

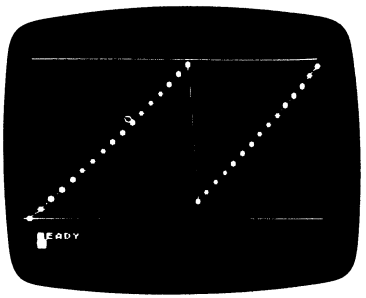
FOURIER ANALYZER is certainly a powerful and educational tool for the engineer, scientist, student, or anyone involved in cyclic phenomena (e.g., music, stocks, etc.).

Accompanying FOURIER ANALYZER is a 20 page manual.

Requires 16K of program memory (Atari version requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk





TRANSFER FUNCTION ANALYZER

(available for all computers)

TRANSFER FUNCTION ANALYZER is a frequency spectrum analysis package designed with the engineer in mind. It applies the concept of the Fourier integral transform to an input data set to provide a frequency domain representation of the function approximated by that input data. TFA is based on DYNACOMP's popular FOURIER ANALYZER, but includes special data handling features. It also presents the results in conventional engineering terms (decibels, log-frequency).

The user may save and recall both the input data file and previously calculated results. Data files may be loaded (from cassette, diskette, or disk), added to, deleted from, and generally edited. As with FOURIER ANALYZER, the input data may be plotted before the calculations are started. The frequency domain results may also be plotted, as well as saved (to be later recalled for new plots). In addition, the analyses are easily separated with different frequency parameters without re-entering the data.

The transformed results are displayed in conventional engineering form. The amplitude points returned are in decibels (DB) relative to the peak value (0 DB). The phase is in degrees. The frequency transform is calculated in equal log-frequency intervals as is common practice in Acoustical and Electronic Engineering.

The frequency results may be optionally plotted. When the amplitude plot is performed, it is in decibel/log-frequency format. This permits easy identification of the characteristic "roll-off" in frequency response. For example, a 9 DB/octave (e.g., 10 log (F(W)) straight line roll-off of a three pole filter is immediately apparent from the plot.

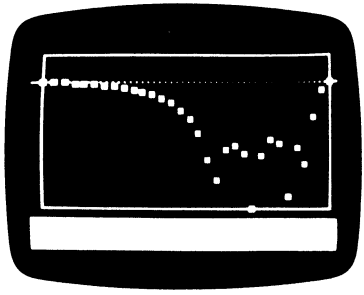
TFA was originally designed as part of a consulting assignment involving the analysis of amplifier transfer function. It is, therefore, a program which has been tested in an actual commercial application. In this particular case, the output data corresponding to the real time response of an amplifier to an input pulse ("delta function") was used directly as input to TFA, and the frequency amplitude results directly gave the transfer function for the amplifier.

Whereas DYNACOMP's FOURIER ANALYZER is well suited to the basic science and educational fields as well as many engineering applications, TRANSFER FUNCTION ANALYZER is a key tool for the electronics and acoustics engineer involved in the analysis of limited duration signals. Included in this package is a well written 20 page manual.

Requires 16K of program memory (Atari version requires 24K).

Price: $25.95 Cassette
$29.95 Diskette
$32.45 8" CP/M Disk

Sample display (Atari):



HARMONIC ANALYZER

(available for all computers)

HARMONIC ANALYZER is the third in DYNACOMP's series of Fourier transform software packages. Whereas FOURIER ANALYZER and TRANSFER FUNCTION ANALYZER (TFA) were designed with limited duration signals in mind, HARMONIC ANALYZER is specific to repetitive wave forms (cyclic processes).

All the data entry, storage, retrieval, and editing features of TFA have been included, as well as the signal and transform plotting functions. The Fourier integral has been replaced with a Fast Fourier Transform (FFT) routine which is the essence of the harmonic analysis. A cubic spline interpolation procedure has been added so that the user may transform irregularly spaced data. Also, the data need not be entered in temporal order; it is sorted before being transformed.

The spline interpolation and sorting features are unique to HARMONIC ANALYZER and will be appreciated by those familiar with other FFT programs which require the data to be both in order and evenly spaced. The spline interpolation scheme was in particular chosen over others to minimize the unwanted interpolation oscillation ("ringing") associated with abrupt signal changes, such as square wave steps.

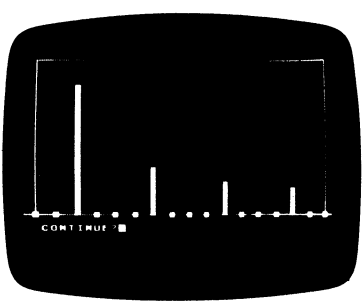
The FFT employed is a base-2 algorithm; that is, the number of data points must be an even power of 2. This places a small restriction on the input data set, but increases the speed of the transform calculation.

HARMONIC ANALYZER is a program which should be in the software library of every scientist, engineer, or experimenter who deals with repeating waveforms.

A 16 page manual is included. Requires 16K of program memory (Atari version requires 24K).

Price: $29.95 Cassette
$33.95 Diskette
$36.45 8" CP/M Disk

Sample display (Atari):



DIGITAL FILTER

(available for all computers)

DIGITAL FILTER is a comprehensive data processing program which permits the user to design his own filter function or choose from a menu of filter forms. The filter forms are subsequently converted into non-recursive convolution coefficients which permit rapid data processing. In the explicit design mode, the shape of the frequency transfer function is specified by directly entering points along the desired filter curve. In the menu mode, ideal low pass, high pass and bandpass filters may be approximated to varying degrees according to the number of points used in the calculation. These filters may optionally also be smoothed with a Hanning function. In addition, multi-stage Butterworth filters may be selected. Features of DIGITAL FILTER include plotting of the data before and after filtering, as well as display of the chosen filter functions. Also included are convenient data storage, retrieval, and editing procedures.

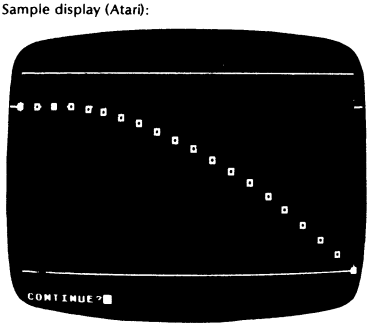
The format of the data storage is consistent with that used by REGRESSION I, REGRESSION II, TRANSFER FUNCTION ANALYZER, and HARMONIC ANALYZER. This permits the user to selectively filter data before processing by any of the above programs.

DIGITAL FILTER is extremely well documented with a 48 page manual which carefully describes the operation of the program as well as the supporting theory. The manual is sufficiently complete that it can be used in conjunction with the software to teach many of the principles involved in digital filtering.

Requires at least 16K of program memory (Atari version requires at least 24K).

Price: $49.95 Cassette
$53.95 Diskette
$56.45 8" CP/M Disk

Sample display (Atari):



COLLECTIONS

DYNACOMP offers reduced prices on the following collection:

FOURIER ANALYZER, TRANSFER FUNCTION ANALYZER and HARMONIC ANALYZER are available for:

$61.95 (3 Cassettes)
$73.95 (3 Diskettes)
$79.95 (3 8" Disks)

ELECTRICAL ENGINEERING TUTORIALS

(Apple only)

DYNACOMP has several education programs designed for electrical engineers. See the EDUCATION section for:

FAST FOURIER TRANSFORM TUTORIAL
DIGITAL FILTER DESIGN TUTORIAL
Z-TRANSFORM TUTORIAL
S-PLANE TUTORIAL

MATCHNET

(TRS-80 only)

MATCHNET is designed for use by the practicing engineer or scientist, the ham experimenter and the advanced student. It does not require any background in computer programming. If you can turn on the computer, you know enough.

Choosing and optimizing an impedance matching network is a tedious exercise at best and fraught with opportunities to err! The usual methods depend on charts, approximations and intuition, and are very time consuming. The computer is clearly the proper weapon for attacking the iterative calculations involved in impedance matching. The component values for twelve networks can be displayed a few seconds after entering the source and load data. Then the frequency response curves can be examined – a new one every few seconds. The programmable calculator pales by comparison!!

Other options include facilities for entering/editing input data, changing frequency and/or decibel scales, and creating hardcopy.

Specifications

Approximate Execution Time:

Network Analysis	– 6 sec.
Frequency Analysis	– 15 sec.
Frequency Graphics	– 5 sec.
Hard Copy Graphics	– 80 sec.

Inputs Required:

Source Resistance
Source Reactance

Load Resistance
Load Reactance

Network Q (optional)
Center Frequency (optional)

Outputs: Screen:

Component values for 12 networks which match specified load to specified source.

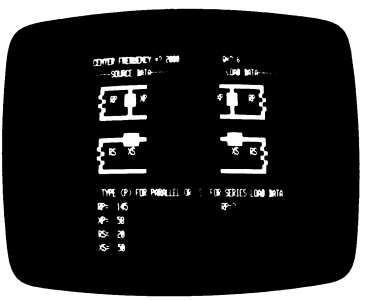
Tabulation of frequency response and refection coefficients of any of the 12 networks.

Graphic display.

If you ever need to design a matching network, use MATCHNET.

Price: $29.95 Cassette
$33.95 Diskette

Sample display:



FILTER ANALYSIS

(Apple only)

FILTER ANALYSIS calculates the effective attenuation of a electrical filter composed of passive elements. The effective attenuation is the ratio (in decibels) of the power delivered (to the load) to the maximum power available (from the source). For the case of lossless filter components (i.e., perfect inductors and capacitors), this ratio is the frequency response of the filter.

For example, a typical filter circuit which might be examined by FILTER ANALYSIS is shown below. As you can see, there is considerable flexability in dealing with serial/parallel components as well as multiple stages.

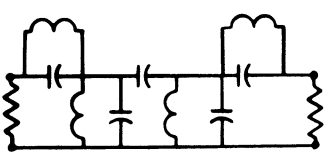
The results of the analysis are available in several forms, including a tabular display of the attenuation and reflection coefficients, and a graphical display of the attenuation in decibels versus log-frequency (see below).

FILTER ANALYSIS is written in Applesoft BASIC, but emulates its own very friendly language. The commands are T (text for comments), E (enter data), R (run analysis), C (change data), L (list circuit description), Q (quit) and P (plot).

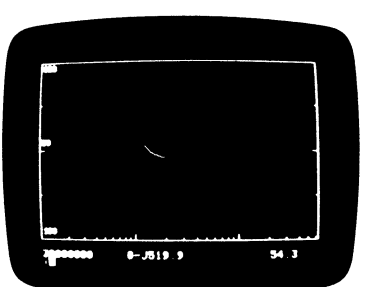
FILTER ANALYSIS is a very powerful tool for quickly and easily testing filter designs.

Price: $29.95 Cassette
$33.95 Diskette

Typical (though not practical!) circuit:



Sample display:



ACTIVE CIRCUIT ANALYSIS PROGRAM (ACAP)

(available for all computers except North Star & Atari)

ACAP is an active and passive circuit analysis program. It can be used to solve for the node voltages of a network. The circuit elements which can be analyzed by ACAP are resistors, capacitors, inductors, voltage sources, current sources, and a voltage-controlled current source. To describe a circuit to ACAP, you enter it in a simple algebraic form. Using the ACAP editor, you may easily enter and change the element descriptions. You may also save the circuit description on tape/diskette in order to later recall it.

To better understand the exceptional features of ACAP, its structure is briefly outlined below.

Requires 48K.

Price: $39.95 Cassette
$43.95 Diskette
$46.45 8" CP/M Disk

The circuit description must have nodes numbered 0 through N when there are (N+1) nodes in the circuit. The maximum number of nodes in a circuit description is 40. The program outputs node voltages referenced to node 0, or outputs node gains in db referenced to a specified node. "n1" through "n4" are node numbers. "Value" is the component value. "%-tol." is the percent tolerance of the component (%-tol. is optional). The r-value and i-value are the source values: r-value is the real part and i-value is the imaginary part (i-value is optional).

ELEMENT	FORMAT
Resistor R (resistance)	n1 n2 R value %-tol.
Capacitor C (capacitance)	n1 n2 C value %-tol.
Inductor L (inductance)	n1 n2 L value %-tol.
Resistor G (conductance)	n1 n2 G value %-tol.
Voltage Source V (voltage)	n1 n2 V r-value i-value
Current Source I (current)	n1 n2 I r-value i-value
Voltage-Controlled Current Source VC (conductance)	n1 n2 VC n3 n4 value %-tol.

Note that transistors/amplifiers can be simulated with the voltage-controlled current source. As you can see from the above element description, ACAP includes an analysis of the uncertainty in the circuit response due to variations in the components. Some of the commands available to ACAP are:

DB - output results in decibels: DB <node 2>
F - frequency to be used: F<f initial, f final, f step>
PRINT - Print node voltages: PRINT <n_1, n_2, n_3, n_4, n_5>
REPEAT - Repeat calculation (to build statistics)
STAT - Calculate mean and standard deviation at nodes: STAT <n_1, n_2, n_3>

The STAT command uses the % tolerance values and the REPEAT number to build a MONTE CARLO description of the range of values at a node. The F command permits an analysis of the frequency response of the circuit.

As you can imagine, it is difficult to describe ACAP in the limited space of a catalog. However, you can appreciate its power!

Comes with a 12 page instruction manual.

LOGIC SIMULATOR

(Apple only)

There are two ways to test a circuit design: build a prototype and experimentally examine all the input/output conditions, or probe the circuit's performance using LOGIC SIMULATOR. The latter approach is faster and less expensive, as well as being more amenable to rapid design iterations.

The circuit elements which may be treated by LOGIC SIMULATOR include the following:

- Multiple Input AND, NAND, OR, NOR, EXOR and EXNOR Gates
- Inverters
- J-K and D Flip-Flops
- One Shots

Inputs may be clocked in with varying clock cycle lengths and displacements. Change of state delays may be introduced to test for real life glitches and race conditions. The response of the system is available for display every clock cycle and, at the user's option, a timing diagram for any given set of logic nodes (including the inputs) may be simultaneously plotted using HIRES graphics.

All this is accomplished with a simulation language (operated through BASIC) designed specifically for this task. This language is both easy to learn and quick to use.

LOGIC SIMULATOR is supplied with a 9 page instruction manual and is ideal for use in the classroom where the student may design logic circuits and quickly test them. Another quality engineering program from DYNACOMP!

Requires 48K.

Price: $39.95 Cassette
$43.95 Diskette
$46.45 8" CP/M Disk

LADDER NETWORK

(TRS-80 and CP/M only)

LADDER uses the technique of describing a network as a series of cascaded two-ports. This representation is sometimes pictured as a "ladder". Each two port is described individually, from load to source, in a data file generated by following the program prompts. Each element type and value is then read and an "ABCD" matrix for each element is generated. This matrix describes the transfer characteristics of the two-port element and the multiplication of two or more "ABCD" matrices will yield the total transfer characteristic of the series of two-ports. LADDER uses matrices (with complex numbers) to describe the transfer characteristics of passive networks (capacitors, resistors, inductors, and transmission lines). The network architectures may include parallel and series branches to any depth, open and shorted stubs, and two parallel or series ladder networks. All elements (except resistors) require a quality factor or loss figure be defined at a single, operator defined, frequency. With this information, the network responses are determined using "real world" components. This program can handle networks consisting of up to 50 two-port elements. Requires 32K.

Price: $29.95 Cassette
$33.95 Disk

LOGIC DESIGNER

(North Star, Osborne and CP/M only)

LOGIC DESIGNER is an interactive digital design program (not a simulator) which greatly speeds up and simplifies digital hardware design. Error-free solutions of combinational logic problems having between 2 and 8 input variables are obtained quickly and easily. Previously, such capability has been available only on large mini and mainframe computers.

The program prompts for a user-defined truth table (including "don't care" conditions) and reduces the input data into two boolean logic equations. Either equation can then be directly and easily converted into digital hardware. The program asks for all necessary information and checks the responses for format errors. An entry editor is provided to allow corrections. Facilities are provided for modification, addition, or deletion of entries. You may also view the entries on command. The editor provides a fast and easy method of correcting errors without re-entering the entire data base.

Due to large amount of data reduction required for complex problems, speed is very important. The reduction process is therefore accomplished with fast and efficient assembly language code. Without it, the program run time would be greatly increased. Manual: 15 pages.

Requires 16K of program memory and an 8080/Z80 CPU.

Not available for Canon or Heath/Zenith.

Price: $34.95 Diskette
$37.45 8" CP/M Disk

WIREMAP

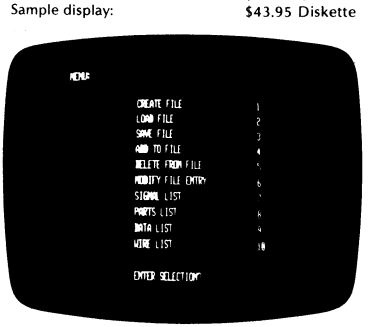
(TRS-80 and CP/M only)

WIREMAP is designed to allow electronic circuits and schematics to be computerized for the purpose of generating parts lists, wire lists, and signal lists. These lists may then be used for the purposes of production, debugging, trouble shooting, and documentation of the circuit. WIREMAP is especially useful for prototype, wire-map, and point-to-point circuitry, since the signal listing may be used as a guide to correctly wiring the circuit. The program also provides an easy means of checking for errors. Any open signals will be flagged during a wirelist printout. Includes easy to use data editing features.

Requires 16K (cassette), 32K (disk).

Price: $39.95 Cassette
$43.95 Diskette

Sample display:



MICROCOMPUTER LOGIC DESIGN PROGRAM

(Apple and IBM only)

MICRO-LOGIC was created to enhance the productivity of electronic digital design by providing an interactive drawing and simulation system, allowing you to quickly design and predict the performance of a circuit without your having to actually build it.

This software product will help you to:

- Draw a logic diagram directly on the CRT screen.
- Run a timing simulation of the network responding to user-defined input sources.

It's like building a breadboard and hooking up signal sources and logic analyzers to see what happens ... except that it's faster.

Logic diagrams are drawn directly on the screen using the Designer program. Using the keyboard commands, you move the drawing cursor around on the screen adding or deleting gates. Each time you add a gate, the system draws it at the cursor position. Drawing interconnecting lines and contacting gate input and output nodes using the PLOT and CONTACT commands allows you to create any type of logic network. Completed logic diagrams can then be saved in a diskette file.

When the drawing is complete, the sytem automatically prepares the netlist needed for the simulation.

Users may create their own gates. Up to 36 different 5-input functions may be defined and subsequently used in any network. Gate characteristics include name, delay, 64-state truth tables, and input/output clocking.

Specifications

Simulation Type	Boolean State/Timing Simulator
Input	Macro Networks. Drawn Logic Diagram. Keyed-in Network Description. Signal Source and Patterns. Gate Truth Tables & Characteristics. Clock Waveforms.
Output	Logic Diagram. Timing Simulation in graphic or printer form. Fanout Report. Compare Report. Input Pattern Listings. Gate Library Listings Network Listings. Clock Waveform Listings.
Components Supported	NOR/OR, NAND/AND, Exclusive-OR, D FLIP FLOP, J FLIP FLOP, JK FLIP FLOP, Tri-State Gate, User-defined Gates, and powerful 16-pin MACROS.
Gates Gate Types Data Chan'ls	1750 max. (IBM): 432 max. (APPLE) 36 max. (IBM): 18 max. (APPLE) 36 max. (IBM): 18 max. (APPLE)
Hardware Required	APPLE II, II plus, IIe with 64K RAM 2 Disk Drives, DOS 3.3 80-column Printer is Optional IBM PC with 128K RAM. Color Graphics Adaptor Board. 2 Disk Drives, DOS 1.1. 80-column Printer is optional. Compatible with most MS DOS systems.
Medium	Supplied on a 5¼" mini floppy diskette with instruction manual.
Price	$399.95
Evaluation Kit	$50.00. Identical to main product except limited to networks of 20 gates.

MICROCOMPUTER CIRCUIT ANALYSIS PROGRAM

(Apple and IBM only)

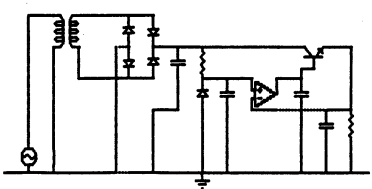
MICRO-CAP is a professional design tool created to enhance the productivity of electronics design by providing an interactive drawing and analysis system. It allows an engineer to quickly design and predict the performance of a circuit without having to actually build it.

The software product enables the user to:

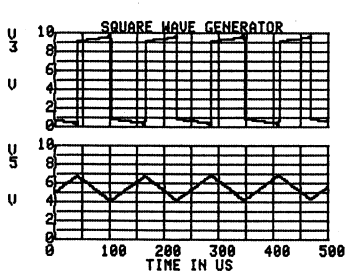
- Draw an electronic circuit diagram directly on the CRT screen.
- Run a time-domain simulation of the circuit responding to user-defined input sources.
- Perform an AC (Bode) analysis showing Gain and Phase Shift vs. Frequency.
- Perform a DC Transfer Characteristic analysis showing Output Voltage vs. Input Voltage.

It's like building a breadboard and hooking up signal sources and instruments to see what happens ... except that it's faster.

Circuit diagrams are drawn directly on the screen using the Designer Module. Using the keyboard you move the drawing cursor around on the screen adding or deleting components. Each time you add a component the system draws it at the cursor position. Drawing interconnecting lines allows you to create any type of circuit diagram. Completed circuit diagrams are then saved in a diskette file. A typical completed circuit diagram looks like this:

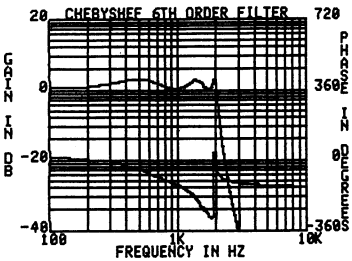


When you have completed a circuit drawing you can perform a Transient Analysis. In this mode the system calcualtes the voltage as a function of time on any two nodes in the circuit. The results look a lot like a dual-trace oscilloscope display:



Transient Analysis can also be generated in printer-plot or tabular fashion.

Alternatively you can perform an AC analysis:



Specifications

Analysis Modes	AC Analysis (Bode Plots). DC Transfer Characteristic. Non-Linear Time Domain
Input	Drawn Circuit Diagram Keyed Circuit Description Standard Components Library
Output	CRT Bode Analysis (or Graphics Dump). CRT DC Analysis (or Graphics Dump). CRT Circuit Diagram (or Graphis Dump). CRT Waveforms (or Graphics Dump). Printer Plot of Waveforms. Printer Tabular Listing of Node Voltages. Network Listing.
Components Supported	Resistors, Inductors, Capacitors, Batteries, Sinusoidal Voltage Sources, Programmable Waveform Voltage Sources, Diodes, OP AMPS, Bipolar and MOS Transistors, Transformers, Polynomial and User-defined Sources, and Voltage, Current, or Time-Controlled Switches.
Nodes	40 Maximum
Hardware Required	Apple II with Applesoft in ROM, or Apple II Plus or APPLE IIe with 64K RAM, DOS 3.3, and 2 Disk Drives. 80-column Printer is optional. IBM PC, 128K RAM. Color Graphics Adapter Board. DOS 1.1, 2 Disk Drives. 80-column Printer is optional.
Medium	Supplied in compiled object code on a 5¼" mini-floppy diskette with a 130-page instruction manual.
Price	$399.95
Evaluation Kit	$50.00. Identical to the main product except limited to 5 node circuits. May be credited towards purchase price.

HINT

(Apple disk)

I/O ERROR: Look at the disk. Which DOS (3.2 or 3.3) does it say? Are you running the same?

CHEMICAL ENGINEERING

In cooperation with another engineering company, DYNACOMP is offering a powerful collection of chemical engineering programs for the TRS-80 (Model I, III and IV) and IBM PC computers. These are very professional programs which we can only briefly describe (see below). Disks are not copy protected so that you may make back up copies or use the modules as parts of other programs.

HXPAK
(Heat Exchanger Analysis)

Computes the exit conditions from heat exchangers from inlet conditions. Treats gas/gas or gas/-liquid heat exchangers (single phase per side). The model yields thermal design information for heat exchangers.

Computes exit conditions from a boiler given the inlet conditions. This module can use either gases or liquids on the hot side and pure fluids or mixtures on the cold side. Produces thermal design information for a boiler.

Computes the exit conditions from a condenser given the inlet conditions. The condenser may use either gases or liquids on the cold side. Calculates exit conditions from inlet conditions. Multiple phase changes are allowed on both hot and cold sides. This code performs a detailed integration of both sides of a heat exchanger.

Price: $275.00

FCPAK
(Fuel Cell Analysis)

Computes exit conditions at a fuel cell anode from the inlet conditions. Three separate ANODE Modules are supplied. These correspond to acid, molten carbonate, and alkaline fuel cells respectively.

Computes exit conditions at a fuel cell cathode from the inlet conditions. Three separate CATH Modules are supplied. These correspond to acid, molten carbonate and alkaline fuel cells.

Calculates the current density of a fuel cell from the cell voltage and operating conditions at the anode and cathode. As in the case of ANODE and CATH, three separate modules are supplied corresponding to the acid, molten carbonate and alkaline fuel cells respectively.

Price: $375.00

PDROP

This code performs pressure drop distribution analysis for piping networks. It handles incompressible flow of water, and compressible flow of steam or air in circular crossection pipe, valves, and fittings. It can handle flows from laminar to fully turbulent.

Price: $74.95

FLUIDPAK

Computes exit conditions from a compressor from inlet conditions.

Computes exit conditions from a turbine from inlet conditions.

Computes the power required to pump a gas given the flow rate and pressure rise.

Calculates particulates removal from a gas stream.

Calculates the size and cost of Rankine cycle turbines and generators.

Price: $225.00

THERMOPAK

Computes enthalpy as a function of temperature and species flow, temperature as a function of enthalpy and species flow, specific heat and ratio of specific heats. Handles hydrogen, water (liquid or vapor), methane, carbon monoxide, carbon dioxide, oxygen, and nitrogen. Has eight species capacity and can accommodate naphtha, methanol, carbon, No. 2 Fuel Oil, or ammonia as the eighth species. Also handles aqueous fuel cell electrolytes.

Calculates the number of atoms of carbon, hydrogen and oxygen in a stream. This is especially useful in reforming reactors and burner analysis.

Calculates the equilibrium constants for the methane reform, methanol reform and shift conversion reactions.

Calculates the vapor pressure of water, ammonia, methanol and mixtures of water methanol, given a boiling temperature. Also calculates the saturation temperature, given a mole fraction and total pressure.

Calculates the mole fractions of species at a node or stream number. It may also be used to calculate the species flows given the mole fractions and total flows.

Calculates phophoric acid vapor loss from acid fuel cells. Also calculates the vapor pressure of water or P_4O_{10} above phosphoric acid.

Calculates the vapor pressure of water above an aqueous potassium hydroxide solution.

Calculates the thermal conductivities and viscosities of the seven gases or mixtures of the gasses modeled. Gives a screen print of the thermodynamic conditions at a node or stream number. Displays the composition in moles and mole fractions, the enthalpy, temperature and pressure at the node.

Price: $199.95

REACTORPAK

Computes exit conditions from an autothermal reformer from inlet conditions using methane reforming and water gas shift equilibrium.

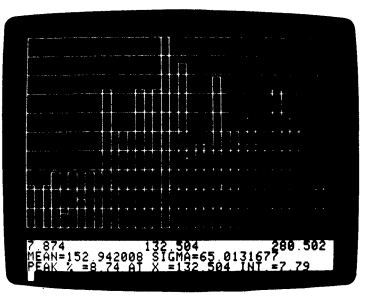
Computes exit conditions from a burner from inlet conditions. Mixtures are computed on a continuity basis.

Calculates the exit thermodynamics for a partial oxidizer when supplied with the inlet conditions.

Finds exit stream conditions from a shift converter given the inlet conditions. Both shift equilibrium and adiabatic operation are assumed.

Determines exit conditions from a methanol reformer from inlet conditions. Has both thermally regenerative and non-regenerative modes of operation.

Price: $325.00



IDENTIFY THIS PHOTO

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Rules

1. Identify the program this photograph came from.

2. Write "Contest", the name of the program, and the catalog number and page number where the program can be found, on the order form.

3. Take $2.00 off your order for $20.00 or more in books or software.

4. Please make only one guess per order. If you're right your order will indicate so.

5. Only one correct guess is allowed per order—but each order from you must have a different (correct) guess to qualify for the discount. That is, you may not keep sending in orders with the same (correct) guess.

6. Please don't cheat by asking your friends for the correct answer. Especially, don't ask us!

Happy Hunting!

HINT

(Atari cassettes)

The most common Atari cassette loading error is 143. The second most common is 138. If you get a 143 error, keep trying. Usually you will get farther and farther through the tape on each try. A 138 error may indicate head misalignment.

ATARI PROGRAMMING HINTS

ABORT LINE NUMBER

If you are developing a program which may still have bugs and wish to trap them and list the line number, here is a handy routine:

```
1 TRAP 20000
20000 PRINT "ERROR IN LINE"; PEEK(186)+
                          256*PEEK(187)
20001 PRINT "ERROR CODE:"; PEEK(195)
```

SWITCHING BETWEEN RADIANS AND DEGREES

The trigonometric functions can have either radian or degree arguments:

For degrees: POKE(251),6
For radians: POKE(251),0 (default)

SPEEDING UP CALCULATIONS

Here is a quick way to pick up some speed in long calculations if you do not mind the screen going blank. Use POKE(599),0 to turn *off* the screen. You will save about 10% to 30% in execution time by not having the CPU repeatedly refresh the screen.

THE ORDER COUNTS!

Which is correct (in ATARI BASIC)?

```
100 IF X=<Y THEN PRINT X
or
100 IF X<=Y THEN PRINT X
```

Another pair is:

```
100 IF X<>Y THEN PRINT X
or
100 IF X><Y THEN PRINT X
```

Simply put, keep in mind that order counts in ATARI BASIC even though it may not count in algebra. These particular order-sensitive inequalities are not much of a problem in practice since they are immediately flagged with an ATARI ERROR.

ENGINEERING ANALYSIS

SECTION PROPERTIES
(Atari only)

Structural/mechanical design and stress analysis often requires calculation of the strength and stiffness properties of various structural cross sections to determine the capability of the sections to withstand axial, bending or torsional loads. SECTION PROPERTIES greatly speeds and simplifies the task of determining these properties, particularly for complicated or irregular sections.

This program is entirely menu driven and self prompting, with extensive error trapping and correcting to help prevent the necessity of restarts. The sections are presented graphically on the screen to increase usability and reduce the possibility of incorrectly defined shapes.

SECTION PROPERTIES provides solutions for cross section area, location of section centroid, moment of inertia, section modulus, radius of gyration, product of inertia, polar moment of inertia, principal major and minor moments of inertia and the angle of the principal major axis. Printer options allow the user to obtain a printer trace of the input data, a screen dump of the plotted section or a hard copy of the results. Includes 45 page manual. Requires 24K (cassette) or 32K (disk). Printer optional.

Price: $39.95 Cassette
$43.95 Diskette

ENGINEERING COLLECTION #1
(CP/M only)

Here is a collection of ten programs for the Osborne computer which should be included in any engineer's library software:

1. ANTENNA PLOT: You may specify up to 100 array elements and their locations.
2. BODE PLOT: You specify the poles and zeroes, the program plots and lists the response.
3. CONVOLUTION: Input two waveforms and get the convolution, both plotted and listed.
4. FOURIER PLOT: Produces the discrete Fourier transform of a set of data. Plots and lists. You may also specify the number of harmonics to be computed, and reconstruct using these harmonics.
5. NUMBER CONVERSION: Converts between decimal, binary, octal and hexadecimal.
6. REACTOR SIMULATION: Based on reactor kinetics equations found in NUCLEAR ENGINEERING HANDBOOK (by McGraw-Hill).
7. CONTROL SYSTEM SIMULATION: Simulates a second order closed loop control system. Responses may be listed, saved and plotted.
8. SPLOT: Plots sets of X, Y data on 80 column printer.
9. PPLOT: Similar to SPLOT, but for dot matrix MX-80.
10. SCPLOT: Similar to SPLOT, but plots on screen.

Each of these programs may be called from the main menu provided on the DYNACOMP diskette, or each may be incorporated into you own BASIC programs (they are written in BASIC). Even if you do not have an immediate application, this collection has considerable *education* value. Sample data sets are included. Supplied with 62 page manual showing examples and listings. Price: $39.95 Diskette
$42.45 Disk

BEAM DEFLECTION
(Available for all computers)
disk/diskette only

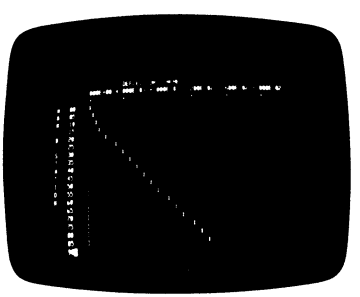
BEAM DEFLECTION is the first in DYNACOMP's new series of structural analysis software packages. It consists of two programs. The first program permits the development of data files which describe the problem. For example, the ends of the beam may be pinned, clamped or free. The beam may be uniformly supported by an elastic bed, or held up by springs variously placed and having differing spring constants. The elasticity and cross section of the beam may vary along its length. The load may be uniformly distributed or it may include discrete forces. The beam may be pinned at various points along its length. And so on. All this information may be easily entered and edited using the data input program.

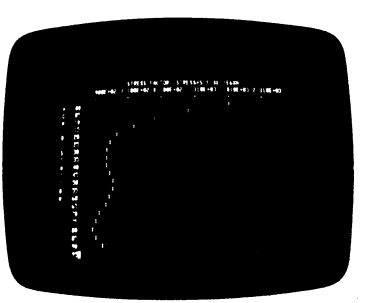
Following this the analysis program is called. The calculated results are the stress and deflections of the beam, both in numerical and graphic form. Since the input data is saved, cases may be easily re-run with modification, thereby permitting iterative design.

The documentation which comes with BEAM DEFLECTION clearly shows how to use the software. In addition, three text problems are described and demonstrated to ensure that you understand how to use the program. Also, helpful theoretical information is supplied in the appendix.

Price: $39.95 Diskette
$42.45 Disk

Sample displays (North Star):





SOFTNET

(Apple and TRS-80 only)

Liquid Pipeline Network Analysis
Apple description; TRS very similar.

SOFTNET is a general purpose liquid pipeline network analysis program designed for the Apple personal computer system. It is written in APPLESOFT basic with machine language subroutines for greater speed. The hardware requirements include a minimum of 48K memory, one disk drive, DOS 3.2 and an optional 80 column printer for permanent copy.

SOFTNET is a powerful modeling tool for system planning and analysis which lets you tackle virtually any type of network configuration. Network data files maybe created, edited and stored on diskette using the Apple's built-in APPLESOFT editing features. When executed, the input data file is interactively requested by the system. An internal data checker searches for data errors and omissions. Once verified, the program indexes all nodes and associated connectors and solves the series of flow equations by an interative link-node technique. Solution tolerance is set by the user. Once solved, results are displayed on the screen and, if desired, printed. Results can be saved for use in another simulation and you can play "what if" by inputting new values, recalculating and then displaying the new results.

Network elements such as pipelines, pumping systems, valves, force mains and storage facilities can be specified to accurately represent the physical system being modeled.

SOFTNET can treat:
- Up to 150 system nodes and determine pressure and external flows at each point.
- Flow through up to 150 connecting elements.
- Hazen Williams equation.
- Mannings equation.
- Pumping systems.
- Check valves and other head loss elements.
- Up to 10 pumping stations including pump characteristics.

Requires 48K. Price: $129.95 Diskette

ROOTS

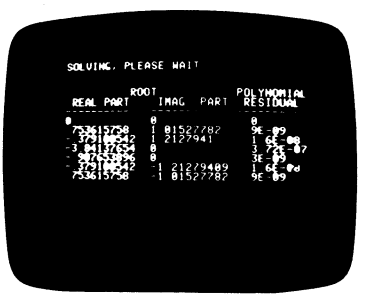
(available for all computers)

If you want to determine the zeroes of a polynomial having real coefficients, ROOTS is the program for the task. ROOTS employs a relatively little known algorithm described in the computer mathematics literature several years ago. This algorithm iteratively seeks all the roots simultaneously. The convergence is cubic (and therefore rapid) and very stable, requiring no explicit initial guesses from the user. Accuracy is usually within two digits of the precision of the BASIC employed. In addition to displaying the calculated solutions, the program also shows the results of substituting those values into the original polynomial. Convergence failure is highly unlikely and, if it occurs, it is generally limited to special multiple (M-2) roots. Any order polynomial may be treated.

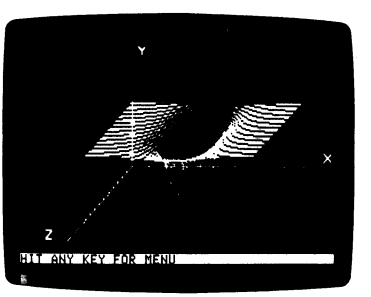
Runs in 16K.

Price: $15.95 Cassette
$19.95 Diskette
$22.45 8" CP/M Disk

Sample display (Apple)



Sample display (Surface Plotter):



MATH PACK

(Apple and IBM only)

If you're a student, teacher, mathematician, engineer or scientist in search of mathematical analysis routines, this package is for you. Elegantly written and user-oriented, this group of four programs makes maximal use of HI-Resolution plotting capabilities to augment math routines and display the results. The program contains a master menu to run any one of the following programs:

Statistical Analysis: A general purpose menu-driven statistics package that allows the user to analyze numerical data bases. The program computes and displays:

- Simple Linear Regression Line
- Mean
- SLR Equation Co-efficient
- Standard Deviation
- Frequency Distribution Plot
- Data Points

Included are routines for disk data file I/O, editing and printer output.

Numerical Analysis: This program will plot any two variable equations that you can write using standard Basic arithmetic functions. The program will plot the equation, its integral, and its derivative. It will determine and list roots, maxima or minima encountered and the integral value over the plot range.

Matrix: This program allows you to solve for the inverse, determinant and solution matrix for linear systems of up to 54 equations in 54 unknowns. It uses standard Gauss elimination with pivoting for maximum efficiency. Included are standard data-base management routines for editing, disk I/O and printer reports of both data and results.

3D Surface Plotter: This program does general purpose 3-D plotting of any 3 variable equations that you can write using standard BASIC arithmetic functions. It performs either hidden-line or transparent plots. Disk I/O routines are included for saving plot pictures on diskette.

The programs are all menu-driven and employ extensive prompting for easy use. The entire series of programs is supplied on a single disk together with demos and an instruction manual.

Requires 48K (Apple), 64K (IBM).

Price: $49.95 Diskette

ENGINEERING ANALYSIS

HEAT LOSS
(Atari only)

HEAT LOSS uses ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) methods to calculate the heat losses through various parts of a building: roof, walls, doors, etc. Window, door, and lower areas are automatically subtracted from wall areas, and the heat loss for each element is calculated and summed for room and building totals. Room infiltration and ventilation loads are also calculated, along with the overall building heat-loss coefficients required by some state energy codes.

HEAT LOSS is intended to be used by heating design engineers, building contractors, architects and engineering students. While most aspects of the design process are explained, additional information from a source such as the ASHRAE "Handbook of Fundamentals" would be required for actual design work. For example, "R" values are needed.

HEAT LOSS provides for storing and retrieving data, reviewing and changing of individual rooms or room elements, and printing out results. It will handle up to two hundred rooms on a 48K machine. Printer output is very general — all 40-column and 80-column printers will work.

Requires at least 32K.

Price: $29.95 Diskette

PIPELINE PRESSURE LOSS
(Atari only)

PRESSURE LOSS calculates the pressure head loss in simple piping systems, such as found in plumbing and heating. The longest path (greatest resistance) is selected, and the corresponding head loss calculated. This gives the greatest head a pump has to deliver to supply the demand.

In operation you select the material (copper, PVC, or schedule-40 steel) and the max/min unit head loss (default is the ASHRAE recommended 100-500 milli-inches/ft.). You also supply the initial flow, the number of elbows, gates, globe and check valves, line flow and branch flow tee's. The program then determines the proper pipe diameter, calcualtes the unit head loss and total loss.

At the beginning of each segment you can add or delete from the flow, or specify a direct loss (e.g., the rated drop through a coil). The program uses data from ASHRAE charts and employs the system head curve relationship to determine the loss for trial pipe diameters until a loss in the specified range is found.

The program is accurate in the loss range of 100-500 milli-inches/ft., and can be used outside that range with less accuracy.

Requires 48K.

Price: $29.95 Diskette

ATARI HINTS:

THE ATARI TAPE RECORDER

We have had *much* difficulty with ATARI tape recorders. In fact, it was rumored at one time that ATARI stopped tape recorder production because of reliability problems. However, this situation has improved.

Every DYNACOMP cassette is made on ATARI equipment and is individually tested (by CLOADING) before it is put on the shelves. However, our deffective return rate is greatest for ATARI cassettes. The cause appears to be related to tape head alignment. First, it seems that the alignment may be more critical in the ATARI case than with other computer cassette recording systems because of the high signal frequencies employed. Second, the tape head placement in one of the ATARI recorders (there are at least two models) is not good. If you do not push the cassette all the way into the recorder before closing the top, the cassette hits the tape guide on the tape head. We have seen tape guides totally bent out of shape by this design quirk. If you have the particular model recorder which allows this to happen, be prepared for trouble . . . at least, be careful.

Another thing we have noticed is the importance of cassette quality in making ATARI recordings. Curiously, it is not the magnetic tape quality which appears to be the deciding factor, but rather the quality of the cassette housing and spindles. The ATARI playback process apparently is sensitive to tape speed. Therefore, a cheap cassette which occasionally sticks can create trouble. We use only "five screw" casings which permit smooth tape movement.

Head cleaning does not seem to be an issue. We have heard rumors that doing LPRINT before recording or playback helps (black magic?), but this has not been verified by our experience.

THE ATARI DISK DRIVE

Although ATARI 810 Disk Drives are generally reliable, failures do occur. We have seen three basic types of malfunctions:

1. Bad electronics.
2. Drive speed fluctuation.
3. Dirty heads/pressure pads/contacts.

The typical error codes which occur are 144 (problem-type 2 or 3) and 138 (bug in the Atari operating system?).

The electronic failures appear to be straightforward; the Service Department at a local computer store simply puts in another chip and the drive is repaired.

The second situation occurs often and is also easily fixed, and the "fix" may be the cause of the problem. The speed on the ATARI 810 Disk Drive is adjustable via an inexpensive "trim pot" located on the printed-circuit board inside the unit. This "trim-pot" is really an adjustable resistor, and appears to vary once in a while (however, see below). Perhaps vibration changes the contact position or resistance. In any case, we have a test disk (available from DYNACOMP for $5.00 plus $2.00 shipping and handling) which we use to check and adjust the speed occcasionally.

It should be noted that early ATARI Disk Drives were particularly sensitive to speed variations. The newer ones have what is called a "data separator". The PERCOM DATA COMPANY is said to have a data separator kit (about $30) which is supposed to alleviate this problem.

The problem of dirty heads is minor and is easily remedied using a head cleaner (a fibrous diskette on which you squirt some solvent and run in your disk drive). However, a dirty presssure pad can cause speed fluctuations by increasing the drag on the diskette. Also, there is a connector internal to the console which can get dirty. The *measured* symptom is a *low* and *variable* disk speed. The *perceived* problem is *unreliability*.

BASIC SCIENTIFIC SUBROUTINES
VOLUME I
(available for all computers)

BASIC SCIENTIFIC SUBROUTINES, VOLUME I by F. Ruckdeschel (published by BYTE/McGraw-Hill; see the January 1981 issue of BYTE Magazine, page 173) is the first in a series of books designed to provide microcomputer users with scientific subroutines written in BASIC. These subroutines have been designed to facilitate the application of microcomputers to scientific tasks which have previously been largely in the domain of the large timeshare mainframe computers.

Through arrangements with the author and BYTE/McGraw-Hill, DYNACOMP has become the exclusive distributor of three software packages keyed to the above text. Each package includes programs organized by chapter and accessed/demonstrated by a special menu program written especially for DYNACOMP. Unlike other software packages commercially available which are keyed to texts, you do not have to search the tape (diskette or disk) to load a particular program. They are all loaded in one step and are called according to the menu selection. This makes life much easier for the user.

Because of the total length of the software listed in the text (greater than 33 kilobytes), three collections have been organized. Each collection will run in 16K of program memory space (Atari requires 32–48K).

Collection #1:

Chapter 2 – Alphanumeric Data Plotting
- Equally Spaced Data
- Arbitrarily Spaced Data

Chapter 3 – Complex Variables
- Polar Coordinate Conversion
- Addition, Subtraction, Multiplication, Division
- Powers and Roots
- Spherical Coordinate Conversion

Collection #2:

Chapter 4 – Vector and Matrix Operations
- N-vector Addition, Subtraction, Multiplication (dot and cross products)
- N-vector Lengths
- Angles Between Vectors
- Matrix Addition, Subtraction, Multiplication, Transposition, etc.
- Row Operations
- Cofactors, Determinants
- Inversion
- Eigenvalues
- Exponentiation

Collection #3:

Chapter 5 – Random Number Generators
- Uniform, Normal, Poisson, Binomial
- Exponential, Fermi, Couchy, Gamma, Beta
- Weibull

Chapter 6 – Series Approximations
- Sine, Cosine, Arctangent
- Natural, Base-10 Exponent and Logarithm

Price: $16.95 per collection (Cassette)
$20.95 per collection (Diskette)
$23.45 per collection (8" Disk)

Accompanying each collection is documentation which describes how to use the associated menu program. Detailed descriptions of input/output parameters and the algorithms employed in the subroutines are to be found in the text BASIC Scientific Subroutines, Volume I (316 pages) which DYNACOMP also distributes ($19.95 plus 75¢ for extra postage and handling). The three collections may be purchased for a combined price of $44.95 (three cassettes), $53.95 (3 diskettes) or $59.95 (3 disks).

See the reviews of BASIC Scientific Subroutines appearing in Kilobaud and Dr. Dobbs.

CELESTIAL BASIC
(Apple diskette only)

Twenty-three programs on two diskettes provide amateur and armchair astronomers and students with important aids to observing and understanding the motions, apparitions, and configurations of the stars and planets, the Sun and the Moon. With these programs you can quickly find planetary positions, rising and setting times of the planets and of the Sun and Moon for any locality worldwide, at any time, on any date. The programs also convert star times to local times and vice versa, tell you when the next lunar eclipse will occur, determine when Mars will next be in opposition, and how Venus and Mercury are placed for observation. You can see how the stars and planets appear when viewed from Antarctica, or follow the motion of the Midnight Sun over the oil fields of Alaska's North Slope. Tutorials help you recognize constellations and their brightest stars. A program provides the configurations of Jupiter's Galilean satelites.

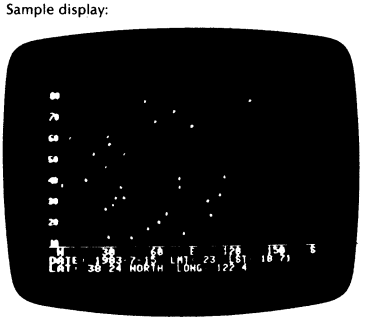
Educators will find the program useful to illustrate the dynamics of observational astronomy. Astrologers can use the programs to show the sky at times of birth. Armchair astronomers can view the night sky in the comfort of their own living rooms.

Written in Applesoft BASIC, the programs can easily be modified as part of an astronomy course to provide increased precision or to suit the special requirements of individual astronomers.

Keyed to the text "CELESTIAL BASIC" by E. Burgess, F.R.A.S. See aslo the Book Section.

Price: $49.95 for 2 Diskettes

Sample display:



HINT
(North Star BASIC)

You do a CAT to get a catalog and get a string of lower case e's: You have a North Star CP/M format disk.

BASIC SCIENTIFIC SUBROUTINES
VOLUME II

(Available for all computers)

This is the second set in the continuing scientific software series (see the discussion associated with Volume I). This volume contains more than 120 kilobytes of excellent software. As with Volume I, the software is divided up into collections, with each collection having its own menu program for calling up and demonstrating the subroutines. Each of the eight collections is keyed to a chapter in the book:

Chapter 1 – Least Squares Approximation

- First-Order Least Squares
- Second-Order Least Squares
- Nth-Order Least Squares
- Multidimensional Least Squares
- Least-Squares Fitting with Orthogonal Polynomials
- Iterated Regression
- Parametric Least Squares

Chapter 2 – Series Approximation Techniques

- Taylor Series and Horner's Rule
- Asymptotic Series
- The Bessel Function
- The Chi-Square Distribution Functions
- The Gamma Function
- The Error Function
- Chebyshev Polynomials
- Economization
- Polynomial Reversion
- Polynomial Inversion
- Shifting the Expansion Point
- Rational Polynomials
- Infinite Products
- Complex Series

Chapter 3 – Functional Approximations by Iteration and Recursion

- Roots of Iteration
- Tangent Iteration
- Acrtangent by Recursion
- Arcsine by Recursion
- Elliptic Integrals by Recursion
- Natural Logarithm by Recursion
- Bessel Functions by Recursion
- Orthogonal Polynomial Coefficients by Recursion

Chapter 4 – CORDIC Approximation Techniques and Alternatives

- The Trigonometric Functions
- Generating the T. and P. Coefficients
- The Inverse Trigonometric Functions
- The Exponential Function
- The Natural Logarithm Function
- The Hyperbolic Trigonometric Functions
- Inverse Hyperbolic Trigonometric Functions

Chapter 5 – Table Interpolation, Differentiation, and Integration

- Lagrange Interpolation
- Newton Divided-Differences Interpolation and Error Estimates
- Choosing the Table Values
- Semi-Spline Interpolation
- Calculating Derivatives from Tables
- Table Integration
- Interpolation and Integration of $2/\sqrt{\pi}\ e^{-x^2}$

Chapter 6 – Finding the Real Roots of Functions

- Gaining Preliminary Knowledge About the Roots of a Polynomial
- Interval Searches
- Successive Substitution
- Newton's Method
- The Secant and False Position Methods
- Aitken Acceleration
- Aitken-Steffenson Iteration
- Finding More Roots: Multiplicity
- Finding More Roots: Removal

Chapter 7 – Finding the Complex Roots of Functions

- Interval Search
- Newton's Method in the Complex Domain
- Mueller's Method in One Dimension
- Two-Dimensional form of Mueller's Method
- Mueller's Method in the complex Plane
- Representing Polynomials in the u(x,y) + i v(x,y) Form and Removing Roots
- The Quadratic Formula
- Lin's Method
- Bairstow's Method

Chapter 8 – Optimization by Steepest Descent

- Steepest Descent with Functional Derivatives
- Steepest Descent with Approximate Derivatives

Price: $14.95 per collection (Cassette)
$18.95 per collection (Diskette)
$21.45 per collection (8" Disk)

Accompanying each collection is documentation which describes how to use the associated menu program. Detailed descriptions of input/output parameters and the algorithms employed in the subroutines are to be found in the text BASIC Scientific Subroutines, Volume II (790 pages) which DYNACOMP also distributes ($23.95 plus $1.50 for extra postage and handling). The three collections may be purchased for a combined price of $99.95 (eight cassettes), $129.95 (eight diskettes), or $144.95 (eight disks).

LINEAR PROGRAMMER

(Available for all computers)

LINEAR PROGRAMMER is a mathematical program designed to solve the standard linear programming inequality problem $a_{1i}X_1 + a_{2i}X_2 + a_{3i}X_3 + \ldots + a_{ni} \leq b_i$ ($i = 1,2, \ldots m$). All linear programming inequalities can be put into this form, and solved by LINEAR PROGRAMMER. Further, if an answer does not exactly exist, the "nearest" solution will be found.

Data input is simple, and the method used is fast and efficient (the Khachian algorithm). LINEAR PROGRAMMER is written in BASIC and can even be incorporated into other linear programming software as a utility. Requires 16K.

Price: $29.95 Cassette
$33.95 Diskette
$36.45 Disk

HINT

(Osborne double-density)

BDOS ERROR: Are you trying to load a single-density disk on a double-density system? That does not always work!

DIFFERENTIAL EQUATIONS
(CP/M only)

DIFFERENTIAL EQUATIONS is a series of programs which yield numerical solutions to ordinary differential equations given suitable initial conditions. Only two restrictions are placed on the differential equation being solved. First, it must be explicitly expressable in some sequence of the standard BASIC mathematical operators: +, –, *, /, EXP, LOG, or the trigonometric functions SIN, COS, and ATN (or ATAN). Second, enough initial conditions must be provided to make the solution unique — that is, for an equation of order N, N simultaneous (at the same value of the independent variable) initial conditions must be known. Several different methods of solution can be chosen from, including Euler, Improved Euler, and Runge-Kutta techniques. An optional extrapolation routine provides improved accuracy for any data obtained. The results of any solution may also be plotted if desired. Output to a line printer is also supported.

Price: $19.95 Diskette
$22.45 8" CP/M Disk

STATE VARIABLES
(CP/M only)

STATE VARIABLES is designed to solve systems of ordinary differential equations (up to ten) which include a forcing function. For example, a network of RLC elements subjected to a varying input voltage can be easily analyzed. You may choose five types of forcing functions: a constant, ramp, step, sine wave, or user-defined function. The program then solves the problem and both prints and plots the resulting solutions (including derivatives). STATE VARIABLES is a very nice tool. Requires 48K, printer is optional.

Price: $19.95 Diskette
$22.45 Disk

THE ATARI CONSOLE PROBLEMS

The most frequent symptoms we have seen are (for ATARI 800's; we have had *no* hardware difficulties with standard 400's and ATARI 400's with DYNACOMP expansion boards):

1. Garbage suddenly appears in the middle of a program. A statement line 24329 might appear between lines 310 and 330. You can list through it, but not from it. And you can't delete it!
2. The program was saved on diskette without any sign of difficulty. The program loaded back without any indication of difficulty; but, when it was listed . . . "Oh no! My only copy!"
3. You turn on the computer to boot it, but it won't — it dies.
4. You are working away feverishly on a program and then try to list a particular portion and the keyboard locks up. You reload the program and it does the same thing again, in *exactly* the same way!
5. You press RETURN and the keyboard locks up.
6. You get obviously wrong values for certain of the built-in BASIC functions.
7. You get an "ERROR 138" (device time-out error) for no apparent reason; everything is plugged in and turned on.

Whenever we run into problems (1) and (2), the first thing done is to open the top of the case, remove the memory boards, and clean the contacts on the bottom of the printed circuit boards. This is done first with a *soft* eraser, then with tissue paper. For ATARI boards with tin plated contacts, cleaning must be done quite often. The gold plated memory boards also seem to have dirt problems, though less frequently. While cleaning these contacts, we also press down the chips (we have removed the plastic covers to aid in heat dissipation). The chips are often loosened because of thermal expansion/contraction.

Next, we look at the "female" contacts inside the unit. If they show signs of any dirt, we clean them with a small brush and alcohol, or folded paper soaked in alcohol.

We also plug and unplug the BASIC Language Module several times to make better contact.

The dirty-contact situation seems to be more of a problem with the ATARI than any other machine we have. Perhaps it is related to the seemingly high temperature within the aluminum shielding box. We know temperature is a factor for one of our 800's; it runs more reliably when located next to the air conditioner.

Problem (3) also appears to be a contact failure, but sometimes within the inside of the computer. We have disassembled our consoles several times, mindlessly jiggled the connectors, reassembled the machine, and have had the symptom go away.

Problems (4) and (5) appear to be related to bugs in the BASIC language Cartridge. We contacted ATARI on this and we were told that indeed lock-up happens sometimes, and that there was no "fix". For the situation to occur, it seems that you have to be working on a large (greater than 24K) program. By changing the way a line is typed (combining lines, etc.), you can sometimes stumble past the problem section.

Problem (6) manifests itself in many ways. For example, the logarithm of 1 should be zero. Only the ATARI gives you a non-zero answer. Similarly, at other "folds" (e.g., 10, 100 for the logarithm; $\pi/2$, $3\pi/2$, etc., for the trigonometric functions), there are obvious errors. It is somewhat ironic that DYNACOMP is reporting this because our staff supplied the 9½ digit accuracy function algorithms for the ATARI! However, Shepardson Microcomputers implemented these algorithms for the ATARI BASIC Language Cartridge, and something went wrong in the process. Incidentally, it is our understanding that the *exact* same errors exist in BASIC A+.

Problem (7) is reputed to be a bug in the ATARI operating system There is nothing for you to do about this.

THE SHAPE MAGICIAN

(Apple II, 48K Diskette)

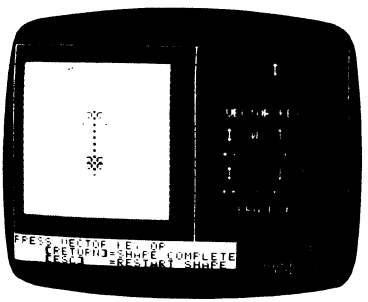
The Apple II has several very powerful graphics features which include the ability to define shapes in a "shape table". The shapes may then be drawn, rotated and scaled on the high resolution graphics screen. This ability is useful for applications which require the repetitive drawing of similar shapes at different locations or angular orientations. Unfortunately, designing and entering shapes by hand is a tedious and error prone process, and changes are very difficult to accomplish once the table has been entered.

THE SHAPE MAGICIAN was designed to make the application of shape tables easy for even novice programmers. A 25 x 25 point grid is drawn on the screen and a graphics cursor moved on the grid to define a shape. The actual shape being defined is simultaneously displayed as it will finally look on the high resolution graphics screen. After a shape has been created, it may be stored on a diskette for later recall by an application program. Shapes may be edited and changed at any time.

THE SHAPE MAGICIAN includes complete documentation describing how to use shape tables in your own high resolution graphics applications. If you ever have wanted to write programs using graphics, but found the programming required too tedious, then THE SHAPE MAGICIAN is the answer to your needs.

Price: $29.95 Diskette

Sample display:



PLAYER-MISSILE GRAPHICS TABLET

(Atari diskette only)

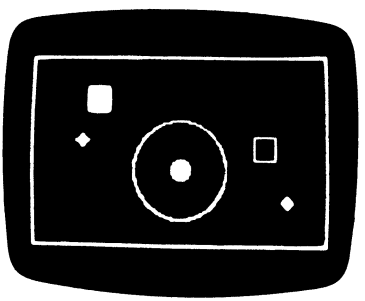
The PLAYER-MISSILE GRAPHICS TABLET (PMGT) was designed to take the drudgery out of developing four color displays in GRAPHICS MODE 7. No longer will you have to read the locations of those tiny blocks on your graph paper and calculate PLOTs and DRAWTOs. With PMGT you will be able to use your joystick to easily design colorful graphic displays and save them on diskette for later recall.

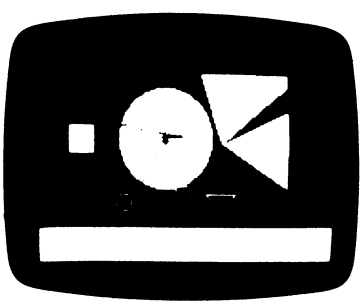
The graphics are drawn by moving a cross-hair cursor around the screen. At each cursor position you may choose a color and automatically plot solid circles, squares, rectangles, triangles and other polyhedrons. You may also choose the size of the shape (given the screen size limitations). Lines may be drawn between cursor points. Also, PMGT provides an exceptionally nice alphanumeric font set which allows you to place horizontal or vertical printing anywhere on the display. PMGT comes complete with an excellent demonstration program and many illustrative data files.

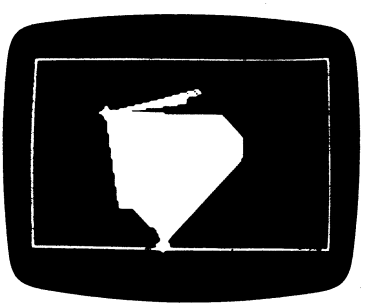
Now that you can easily create and save background images on diskette, you can make your own player-missile graphics programs.

Price: $19.95 Diskette

Sample displays (we enjoyed this one!):







PLAYER-MISSILE PLAYER EDITOR

(Atari diskette only)

PMPE is the companion program to DYNACOMP's PLAYER-MISSILE GRAPHICS TABLET. With PMGT you can create the background or "stage". With PMPE you can generate the characters (missiles) to move about on the stage.

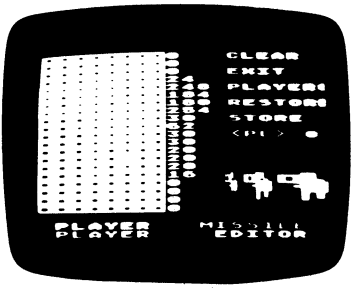
PMPE is easy to operate and use to create animated graphics. A joystick is employed to build the desired set of characters. Then these characters may be saved on disk as statements composed of a line number and a string (plus an optional identifier remark statement). These lines may later be appended to your animated graphics program.

PMPE comes with a fully REMarked example program which shows how characters created by PMPE may be used in your own program.

Requires 24K, disk, and joystick.

Price: $19.95 diskette

Sample display:



GRAFIX

(TRS-80 only)

Have you ever attempted to utilize your TRS-80's graphics potential, but were put off by the prospect of typing in the many set statements needed for an intricate figure? GRAFIX takes the burden out of TRS-80 graphics by allowing you to first "draw" your creation using your computer's keyboard to control the write cursor. Once the figure is drawn, you can easily modify it until it is perfect and then save it as a string variable in your BASIC program. Draw a "happy face," save it as H$ and have it displayed by simply using PRINT H$ in your BASIC program!

GRAFIX is written in assembly language by SOFTWARE SPECIALISTS of California. Once loaded into memory, it remains there throughout your entire programming session. You may load any number of BASIC programs and GRAFIX will be there to add graphics whenever you desire.

REQUIRES 16K. Model I only.

Price: $15.95 Cassette
$19.95 Diskette

PLAYER MISSILE GRAPHICS TOOL KIT

(Atari only)

DYNACOMP now offers three Atari graphics development packages PLAYER-MISSILE GRAPHICS TABLET (P.M.G.T.; page 25 of the Winter 1982 - 1983 catalog), PLAYER-MISSILE PLAYER EDITOR (P.M.P.E. page 26) and PLAYER-MISSILE TOOL KIT (described below). The first package helps you create complicated backgrounds for your program. The second provides an easy-to-use editor for creating players and missiles, but presupposes that you already have some knowledge of how to use these players.

The third offering, PLAYER-MISSILE TOOL KIT is an expanded version of P.M.P.E. which **teaches** you the basics of player missile graphics and also provides very professional and easy-to-use tools for graphics development. The documentation (21 pages) is clearly and concisely written (it is excellent!). It carefully explains what player-missile graphics are, and the elements of their use.

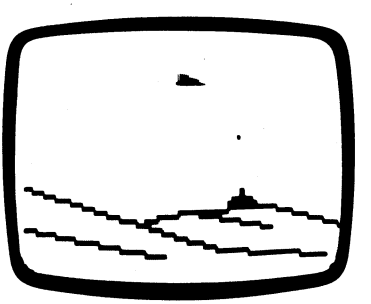
The package also includes three programs:

1. PMINIT – a program to be included in your own code which facilitates the operation of PM graphics. This program pokes into memory machine language software which greatly speeds up player movement.
2. PMBUILD – A P.M.P.E. which helps you quickly construct players and missiles for inclusion in your program.
3. PMDEMO – A classy demonstration program, complete with a program listing and comments, which clearly shows the use of PMINIT and how simple it is to create graphics.

To really test this package, it was given to a DYNACOMP employee who had never used player-missile graphics, and who hates games. He came back very pleased and excited about writing an animation (as he called it). He was so enthusiastic that DYNACOMP had him write this description! Requires 24K.

Price: $25.95 Cassette
$29.95 Diskette

Sample display:



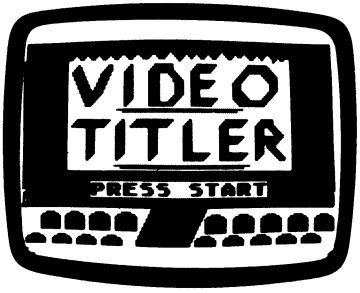
VIDEO TITLER
(Atari only)

The VIDEO TITLER may be used to create a wide variety of screen displays and sounds. These displays can incorporate various sized text and multicolored high resolution graphics screens. The display sequences can be used as a title generator for home video movies or as a message display board to sell or demonstrate a product. Individual displays can be photographed for use in slide presentations. The display sequences can be made to repeat making them useful for teaching or entertaining young children.

Commands are provided to make it easy and fun to paint your own high resolution graphics screens. These screens can be saved, changed and incorporated into display sequences. Detailed step by step instructions and many ready to run examples included on the program diskette make VIDEO TITLER easy to use.

Price: $29.95 Diskette

Sample display:



DOODLE DRAWER
(Atari only)

Here is a really nice "thinking and doing" program for the young child, plus a core routine for the programmer. DOODLE DRAWER allows you to 'paint' pictures using the Atari joystick. Four colors at 14 brightnesses are available. The resulting pictures may be saved on cassette or diskette for later recall. We have all played with the Etch-A-Sketch™. Well, here is the computer counterpart!

The programmer will also find the diskette version of DOODLE DRAWER interesting in that the program can be customized to auto-boot and automatically load and display a DOODLE DRAWER picture. It can then call another program, making for a nice way to "sign on" a program.

Requires 16K.

Price: $14.95 cassette
$18.95 diskette

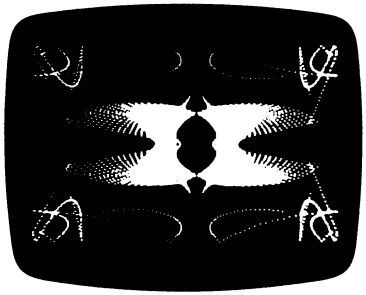
CRYSTALS
(Atari only)

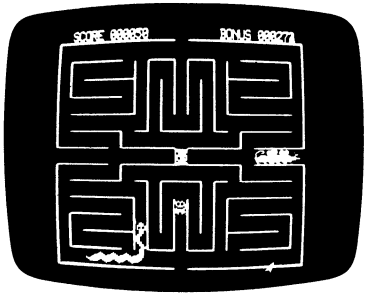
CRYSTALS is a unique program. It is not a game or simulation, business, or technical program. It simply generates very beautiful color patterns on your screen. These fascinating graphics displays are always different and the effect is mesmerizing, much like sitting in front of an electronic fireplace! CRYSTALS has been used in retail stores to demonstrate the graphics, sound, and color capabilities of the Atari.

Requires 16K.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:





IDENTIFY THIS PHOTO

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Contest rules may be found on page 97.

TURNKEY AND MENU

(Atari only)

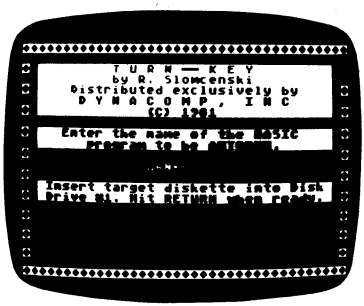
TURNKEY is a diskette-based utility program which allows you to select any BASIC program to be automatically RUN at system power-up. TURNKEY creates an AUTORUN.SYS file on your diskette. This file auto-executes the BASIC program of your choice when the console is first turned on.

MENU is a BASIC program included on the TURNKEY diskette at no extra cost. MENU lists the contents of the diskette alphabetically and allows you to RUN any BASIC program on the diskette by typing a single key. Use TURNKEY to auto-execute MENU and you have the ability to RUN any program on your diskette from the instant you turn on the Atari — a truly professional "turnkey" system!

Requires 32K Atari disk system.

Price: $19.95 Diskette

Sample display:


T U R N — K E Y
by R. Slomcenski
Distributed exclusively by
D Y N A C O M P , I N C
(C) 1984
Enter the name of the BASIC
Insert target diskette into Disk

EBASIC WITH STARBASE 3.2

(CP/M only)

What is EBASIC? EBASIC is a BASIC programming language which has most of the standard features of Microsoft BASIC, as well as some other capabilities which many will find interesting. In fact, EBASIC is *very* similar to CBASIC (available from Software Systems), except EBASIC costs only a fraction of the price. The operational differences are that EBASIC has no PEEK/POKE, PRINT USING or CALL facilities. It *does* have

FOR	NEXT	RESTORE	GOTO	LET
CLOSE	GOSUB	INPUT	ON	PRINT
READ	FILE	RETURN	OUT	END
STOP	DATA	DEF	DIM	RANDOMIZE
IF	REM	ELSE	THEN	

ABS	ASC	ATN	CHR$	COS
COSH	FRE	INP	INT	LEFT$
LEN	LOG	MID$	POS	RIGHT$
RND	SGN	SIN	SINH	STR$
SQR	TAB	TAN	VAL	EXP

The advantages which EBASIC has over Microsoft BASIC are:

1) Line numbers are not necessary except for GOTO/GOSUB transfers.
2) "Procedures" can be included in the program at the "compile" stage (good for structured programming).
3) The precision is automatically 14 digits.
4) The syntax of the *entire* program is checked during the compile step.
5) EBASIC run-time programs tend to be much smaller in memory usage.
6) EBASIC is *much less expensive*.

EBASIC is easy to operate. We sometimes use it at DYNACOMP instead of Microsoft BASIC. A condensed manual is supplied with the diskette/disk. Also, a copy of STARBASE 3.2 (a *very* popular DYNACOMP program) is included on the diskette/disk so that you may examine proper EBASIC syntax. In addition, we recommend you obtain the CBASIC manual published by Osborne/McGraw-Hill (available through your local computer store). Runs on 8080 and Z80 CP/M systems. Requires 24K. A knowledge of the use of CP/M's ED.COM text editor (or some other) is assumed.

Price: $39.95 Diskette
$42.45 Disk

TEXT EDITOR II

(CP/M MBASIC only)

This is the second release version of DYNACOMP's popular TEXT EDITOR I. The first version has been available to the public for more than two years. We have now retired TEXT EDITOR I and have replaced it with the more powerful and even easier to use TEXT EDITOR II.

TEXT EDITOR II is a line oriented text processor. With this editor, you may build files in chunks and later quickly assemble them for display. Blocks of text may be appended, inserted, or deleted. Text files may be saved on disk/diskette in right justified/centered format to be later printed. In addition, CP/M files which were saved in ASCII format (including BASIC and assembly language programs) may be read by TEXT EDITOR II and processed. In fact, text files may be built employing CP/M's ED and later formatted using TEXT EDITOR II.

On the whole, TEXT EDITOR II is an inexpensive, easy to use, but flexible text editing system.

TEXT EDITOR II is supplied with a comprehensive 21 page manual.

Requires at least 16K of program memory. (Atari version requires 32K).

Price: $29.95 5¼" North Star CP/M Diskette
$33.45 8" CP/M Disk

DFILE

(North Star, Osborne, and Atari diskettes only)

The disk user soon learns that the rapidly accumulating stack of diskettes represents an organization problem. Shuffling through this stack to find a particular program or file is often frustrating.

The DFILE user, however, is able to quickly locate any desired file or program. Each diskette is assigned a four character ID and the list of its files is maintained on a special data base system diskette. The simple menu selections in DFILE allow complete maintenance of this data base. DFILE may be used on single/double density and single/double-sided drives (North Star), and can be customized to use either one or two drives.

The North Star version is also provided in two programs for execution at 2AOOH or 2DOOH. A list of available menu selections is shown below.

1 - LIST DISK DIRECTORY
2 - ADD COMMENTS TO DFIL ENTRY
3 - DELETE FILE ENTRY IN DFIL
4 - LIST DFIL
5 - LIST ALL ENTRIES FOR FILE NAME X
6 - LIST ALL ENTRIES FOR DISK ID X
7 - ADD DISK DIRECTORY TO DFIL
8 - INITIALIZE DFIL

Menu selection 7 copies entries from the user disk directory into the data base file.

Menu selection 5 quickly lists all diskette locations of a particular file or program.

Menu selection 6 lists all files which are on a particular diskette.

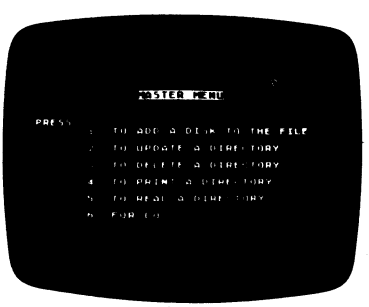
The other menu selections allow the user to maintain current information in the data base.

DFILE is a must for any North Star or Atari user having an extensive diskette library.

Runs in 8K of program memory.

Price: $19.95 Diskette

Sample display (Osborne):



TIDY

(TRS-80 only)

This will certainly be one of your more valuable TRS-80 programs, especially considering its modest price! TIDY will renumber your BASIC program over any legal line number range using any convenient numbering interval.

TIDY also compacts your programs by removing all spaces and/or Remark statements. The result is a physically smaller program (less bytes of RAM used) which executes significantly faster than an "uncompacted" version.

TIDY is written in assembly language by SOFTWARE SPECIALISTS of California. It, therefore, executes very rapidly and does not take up much memory. In fact, it is recommended that TIDY be loaded at the beginning of a programming session and left in memory. You can load your BASIC programs without having to reload TIDY; it is always there ready to tidy-up your programs.

Requires 16K. Model I only.

Price: $14.95 Cassette
$18.95 Diskette

TEXT MASTER

(Apple 32K, diskette only)

TEXT MASTER is a general-purpose text editor for the Apple II computer. It features powerful English-oriented commands which permit the complete manipulation of textual information. The information treated may be correspondence, computer programs, data to be used by other programs, and more. TEXT MASTER also interfaces with any printer connected to your Apple. The minimum system requirements are 32K of RAM, Applesoft on ROM, and at least one DOS 3.3 disk system. TEXT MASTER can process any length file segment by segment. Thus it is possible to process files as large as a diskette. Comes complete with an efficient 16-page manual. TEXT MASTER is equivalent in capability to many word processing systems costing three times as much.

The commands available in TEXT MASTER are:

COLLECT	USE	EXECUTE	NONUM
INSERT	MERGE	STOP	RENUM
DELETE	SAVE	COPY	FREE
REPLACE	WAIT	MOVE	LENGTH
LIST	RESAVE	CLEAR	AUTO
RETRY	APPEND	SET	MANUAL
CHANGE	SCRATCCH	SHOW	CATALOG
MODIFY	COMPARE	NUM	DISPLAY
HELP			

Price: $49.95 Diskette

SCREEN PRINTER

(TRS-80 only)

The SCREEN PRINTER is a utility for the TRS-80 Model I (the Model III has this function built in) which sends the contents of the screen to the printer. If the screen contains non-graphic characters (characters with ASCII codes less than 128), SCREEN PRINTER produces an exact reproduction of the screen. If the screen contains graphic characters (characters with codes from 128 to 191), the utility will replace each of these characters with an asterisk in the printout. To create an accurate reproduction of the screen, this utility requires a printer with at least 64 characters to the line.

Price: $9.95 Cassette
$13.95 Diskette

SMART KEYBOARD
(Atari only)

This auto-loading machine language program makes your Atari keyboard into a powerful programming tool. You can automatically execute several commands during system startup or program your keyboard to expand a single key-stroke into any set of characters desired. The single-key entry feature allows handicapped individuals to enter any character without having to press two keys simultaneously. A locked cursor feature allows cursor movement up to 50% faster without pressing the CTRL key. SMART KEYBOARD also functions as a file handler allowing your program to store characters destined for the keyboard. This very flexible tool helps intermediate to advanced programmers develop programs much more rapidly. SMART KEYBOARD is fully operable in BASIC, ASSEMBLER, and PILOT cartridge environments. Assembler source is provided for study or modification.

Price: $19.95 Diskette

NORTH STAR UTILITIES PACKAGE (N★UP)
(North Star only)

N★UP is a set of tools which every person who programs in North Star BASIC should have. It consists of four general functions:

1. Program compression (spaces/REMs removed)
2. Program comparisons
3. Program expansion (to one statement per line)
4. Formatted program displays (e.g., FOR/NEXT indentations)

Actually, N★UP is four separate programs. The compression program is DYNACOMP's original COMPRESS (1981 catalog). The comparison program is COMPARE (1981 catalog). The other two functions are performed by N★XPAND and N★DISPLAY, two new products. Together they form a nice set of utility software!

Price: $29.95 Diskette

ATARI UTILITIES
(Atari only)

DYNACOMP is offering ATARI UTILITIES both as a goodwill gesture and also to make our own lives simpler. The DYNACOMP diskette contains four programs: A (sorely needed) RENUMBER program, a disk RPM test program, and two programs which draw portraits of the Atari 400 and Atari 800 (cute, but really not very useful). The line renumbering routine is for those who program and have been frustrated by the absence of this common function in Atari BASIC. The RPM test program allows you to check (and adjust) your disk speed to meet the original specifications. We have ulterior motives here: If your drive speed is accurate, then your DYNACOMP software will load more reliably and you will not be calling DYNACOMP and telling us about a 138 or 144 error. Our price simply covers our costs:

Price: $5.00 Diskette

(Does not qualify in or for quantity discounts)

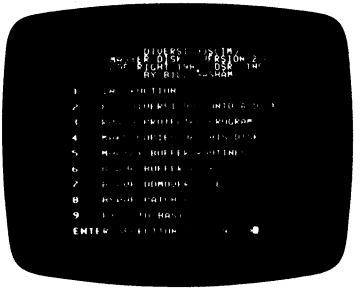
DIVERSI-DOS
(Apple only)

Here is a disk operating system (DOS) for your Apple which has tremendous advantages over that supplied by the original manufacturer. First, DIVERSI-DOS speeds up your disk input/output by a factor of 3 or more, which is very noticeable for mail list, financial, engineering, etc. programs. Second, DIVERSI-DOS includes a keyboard buffer; you can type ahead as fast as you want. Third, with a 16K RAM card (which incidentally, DYNACOMP sells at a *low* price), you can buffer your printer output ("spool"). Fourth, DIVERSI-DOS can move itself to a RAM card to increase space for BASIC. And more!

Now for the surprising part. DYNACOMP's price is *$5.00* for the diskette plus $3.00 for the documentation. When the diskette is delivered "it is then the responsibility of the customer to send a $25 license fee" to the original publisher. Since DYNACOMP's sales are confidential, it is up to you and your conscience to send in the license fee. We think this is a very noble experiment and we will be comparing our net sales figures with the publisher's license returns (*please* mention that you got DIVERSI-DOS from DYNACOMP). Requires 48K, one disk drive.

Price: $5.00 for the diskette plus
$3.00 for the documentation

Sample display:



Note: DIVERSI-DOS cannot be included in volume discounts.

SCREEN MASTER
(Atari only)

SCREEN MASTER is a program that writes programs for you. It allows you to move a cursor about the screen to create displays or "panels", such as menus for programs or any other kind of text display. You can create panels in ATARI text graphics modes 0, 1, or 2. Simple commands allow easy repositioning of text on the screen. When the panel is done, SCREEN MASTER actually writes the BASIC statements that will reproduce the panel you have designed and stores them on disk. Later you can insert these program lines into another program you might be writing, or recall them from the disk for further editing. All the functions performed by SCREEN MASTER are selected from a menu. SCREEN MASTER makes it very easy to create visually pleasing and effective text displays.

Requires 32K.

Price: $19.95 Diskette

INTELINK
(Atari diskette only)

INTELINK is a menu-driven collection of programs which are designed to facilitate two-way telephone communication between your Atari and other computers, such as information networks and time-share systems. These programs have very special features which dramatically reduce the time required to transfer information to or from your Atari. Since the phone company and most networks charge according to connect time, INTELINK can easily pay for itself through reduced service charges.

INTELINK works as follows. Suppose you wish to read a large information file which is available from THE SOURCE (a popular service). Without INTELINK you might use Atari's Telelink program to list the information one screen frame at a time, frequently pausing in order to read the data (e.g., stock quotations). Alternatively, the data could be directly sent to your printer for later study. Both methods are effective, though they are slow and, therefore, costly. INTELINK provides both of those modes of operation, plus the additional option of quickly storing the complete exchange on diskette. In this way, the data is permanently stored on the diskette and may be conveniently recalled later.

INTELINK has several other important features, including one designed for use with time-share systems. Consider the situation in which you wish to write a program for a time-share computer. Ordinarily, the program would be built and edited at length while connected to the other computer. With INTELINK you can turn the Atari into a very intelligent terminal at which you may create the program (in BASIC, FORTRAN, PASCAL, etc.) off-line using the Text Editor program which is part of INTELINK. The Atari may then be connected to the time-share computer and the program quickly loaded, again saving connect time. Further, when you run the program, all the results (and responses) may be saved on diskette.

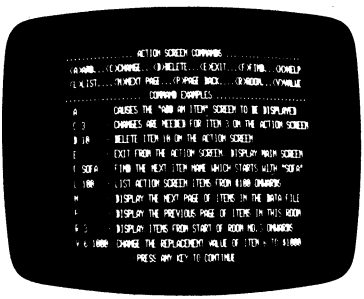
INTELINK requires the following equipment:

- An Atari 400 or 800 computer with at least 24K or RAM (Random Access Memory).
- An Atari 850 interface module.
- A 300 baud modem (e.g., an Atari 830).
- An Atari disk drive.
- Optionally, an Atari 825 (or equivalent) printer.

Operationally, it is required that the other computer communicate in the full duplex mode at 300 baud.

INTELINK comes with a 13 page manual which fully describes all functions.

Price: $59.95 Diskette


ACTION SCREEN COMMANDS
(A)NAME...(C)CHANGE...(D)ELETE...(E)EXIT...(F)ETCH...(H)ELP
(L)IST...(N)EXT PAGE...(P)PAGE BACK...(R)OOM...(V)ALUE
COMMAND EXAMPLES
A CAUSES THE "NAME OF ITEM" SCREEN TO BE DISPLAYED
C 3 CHANGES ARE NEEDED FOR ITEM 3 ON THE ACTION SCREEN
D 10 DELETE ITEM 10 ON THE ACTION SCREEN
E EXIT FROM THE ACTION SCREEN. DISPLAY MAIN SCREEN
F SOFA FIND THE NEXT ITEM NAME WHICH STARTS WITH "SOFA"
L 100 LIST ACTION SCREEN ITEMS FROM 0100 ONWARDS
N DISPLAY THE NEXT PAGE OF ITEMS IN THE DATA FILE
P DISPLAY THE PREVIOUS PAGE OF ITEMS IN THIS ROOM
R 3 DISPLAY ITEMS FROM START OF ROOM NO. 3 ONWARDS
V 6 1000 CHANGE THE REPLACEMENT VALUE OF ITEM 6 TO $1000
PRESS ANY KEY TO CONTINUE

UTIL
(Apple only)

This APPLESOFT program runs on a 48K APPLE II with access to APPLESOFT. UTIL will operate under DOS 3.2 and 3.3. UTIL will start by asking you to insert the diskette you wish to process. It will pause for you to insert the diskette you want to examine into the disk drive. UTIL will then read the diskette to determine the initial parameters it is to use (such as 3.2 vs. 3.3). The MENU page is then displayed.

The MENU shows the list of options available in UTIL, along with the currently selected slot/drive and track/sector numbers. As is the rule in UTIL, these numbers are displayed in hexadecimal. The following options are available:

SEARCH MODE	DELETE DOS
CHANGE MODE	PRINT SECTOR
CATALOG FUNCTIONS	CHANGE DISK ID
FREE SPACE	NEW TRACK, SECTOR
FREE SECTORS	NEW SLOT, DRIVE
DIRECTORY SECTOR	INSTRUCTIONS/NEW DISK
VTOC SECTOR	
EDIT VTOC	DISK CLEAN-UP

As you can see, UTIL contains a complete set of functions for disk manipulation.

Requires 32K.

Price: $19.95 Diskette

DYNAFORTH
(North Star and CP/M only)

DYNAFORTH is an 8080 assembly language implementation of the figFORTH 8080 Version 1.1 language. The software includes the complete figFORTH vocabulary, the additional DYNAFORTH vocabulary for terminal and disk interfacing, an 8080 assembler that provides the ability to include machine language code in FORTH word definitions, a line editor for program development, and a 50-page user's manual. The user's manual is not in itself a tutorial on the FORTH language, but contains references to recommend tutorial manuals.

The North Star software package includes three versions for execution with DOS Release 5.2 as well as earlier releases. The DYNAFORTH minimum configuration requires at least 12K bytes of RAM in addition to the DOS.

The 8" CP/M software contains the FORTH.COM file and an initial screen file for program development. The CP/M version requires 24K of RAM.

Price: $74.95 Diskette
$76.45 Disk

IDENTIFY THIS PHOTO

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Contest rules may be found on page 97.

GUMBALL RALLY ADVENTURE

(North Star and CP/M only)

The GUMBALL RALLY ADVENTURE is based loosely on the movie "Gumball Rally". It is an outlaw race from the East Coast to the West Coast by any route you choose. You can go as fast as you want; but, if you crash or get thrown in jail for reckless driving, you lose! Ordinarily, you would have a map to plan your route; but, as every true adventurer knows, you must draw your own map! In the movie, the winner won a gumball dispenser of the type you used to find on the sidewalk in front of drugstores. Hence, the name.

In this adventure, your goal is to first find your way to the finish line, and second to maintain the highest possible speed on all roads. Your choice of vehicle will determine your maximum speed and your range. (Big-engined cars burn more gas!) There are gas stations along your route where you can refuel when needed. Your score depends on your average speed.

COMMANDS

As in most adventure programs, you "talk" to the computer in one-word or two-word commands. For example, "GET GAS" or "FIX TIRE". In addition, in this program, you control the speed of your car by typing a number representing the speed you wish to travel. Your speed around turns or on curvy roads will depend on the sharpness of the turn. The sharper the turn, the lower the maximum safe speed. On straight stretches, you can go as fast as your car will allow, but you must decelerate before entering a turn. Failure to decelerate may result in your demise ! !

GUMBALL RALLY ADVENTURE will provide you with many hours of enjoyment.

Requires 32K.

Price: $21.95 Diskette
$24.45 Disk

CRANSTON MANOR ADVENTURE

(North Star and CP/M only)

North Star and CP/M users finally have available a most intriguing adventure program. The CRANSTON MANOR ADVENTURE takes you into mysterious (and dangerous!) Cranston Manor where you attempt to collect its many treasures. Lurking in the Manor are wild animals and robots who will not give up the treasures without a fight! This challenging program will provide you with many hours (days?) of fascination. The adventure may be interrupted at will and your status saved onto the diskette. Any number of people may play; The CRANSTON MANOR diskette will store over 200 suspended games.

CRANSTON MANOR comes with a 6 page instruction booklet which outlines the means of play, but does not give away the solution!

The Apple version of CRANSTON MANOR (not distributed by DYNACOMP) is in the top 30 of SOFTALK's popularity list!

Price: $19.95 Diskette
$22.45 CP/M Disk

UNCLE HARRY'S WILL

(North Star and CP/M only)

Uncle Harry has died! You are called to his house on the east coast of the country to hear the will. The will leaves everything to you! The only problem is that he failed to tell where "everything" is located. Not even a map! The only thing that might help is a poem which gives clues on where to look. You will have to travel by both car and foot from coast to coast and border to border to solve this ADVENTURE. There are over 300 locations. This game requires a 40K system. Be careful and watch out for red herrings! Good Luck!

Price: $24.95 Diskette
$27.45 8" CP/M Disk

VALLEY OF THE KINGS

(Atari diskette only; 48K)

VALLEY OF THE KINGS is an exciting and challenging graphics adventure for the Atari. The adventurers must use their skills to locate objects and passages. There are keys, matches, locked gates, swords, coins, rings, magic daggers, dark passages, guarded temples, fierce princes, gruesome trolls, mountain bandits, and strange guard beasts. And these are just the ones you will meet in your first journey!!! VALLEY OF THE KINGS is a triple journey adventure.

Your first journey places you in the mountainous region of southern Egypt. Hidden in the mountains are treasure and danger. If you survive you will gain the riches and skills needed for your second journey. In the second journey you find yourself deep in the tunnels beneath the city of Armant. Many enter these tunnels but few discover the secret of the maze and the only passage out. That passage leads to the third and final journey, perhaps your very last...

The final journey sends you against the powers of the Kings. You must outmaneuver each one to gain access to the valley and your reward.

VALLEY OF THE KINGS fills an entire diskette and has been said to be "the best Atari graphics adventure available." It is available only through DYNACOMP and its dealers.

Price: $29.95 Diskette

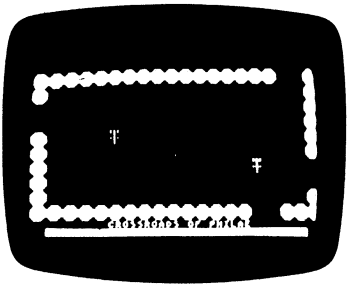
WHEMBLY CASTLE ADVENTURE

(North Star only)

John Whembly was a knight, pirate, and RICH! He owned a large castle located on an island in a small lake somewhere in jolly old England. Before he died, he hid somewhere a chest of gold coins (or so it is claimed). Many people have tried to find it but none have succeeded. Maybe you will have better luck!

Price: $19.95 Diskette

Sample display:



WINDMERE ESTATE ADVENTURE

(North Star and Apple only)

The WINDMERE ESTATE ADVENTURE is an exploration simulation. You start in the Rose Garden on the grounds of Windmere Estate. Using the computer and two-word sentences, you attempt to find all the treasures and deposit them safely at the treasure drop. There are a number of puzzles to solve (e.g. how to get to the Warehouse). There are some tricky areas where caution should be exercised or you will not survive. The key to winning the game is to successfully discover and enter all the hidden rooms (which abound).

The object of the game is to score all the points. Each item considered a 'treasure' has a number of points assigned to it, and the points will be credited to your score when that item is DROPPED at the Warehouse. When the last treasure is DROPPED at the treasure store, you will arrive at the last puzzle of the game. A successful solution to that problem gives you the final victory!

The computer will recognize many one- or two-word commands including quite a few verbs and nouns. Examples: HELP, QUIT, LOOK, NORTH, N, SE, and DOWN. This is not a complete list by any means. Some two-word commands are: GO SOUTH, POUR WATER, and TAKE ROPE. In some cases, where you are determines the validity of a command (CLIMB, ATTACH ROPE, etc.) At other times a command will be valid only if you have some special item in your posession (PRY GATE). There are also cases where some previous action must have been successful before a command is valid (e.g. TAKE RATS).

On occasion you will find an item that is obviously not a 'treasure'. An example of this is a lamp. This can be carried about and used to light dark areas (use LIGHT ON, or simply ON to start it. Use OFF to turn it off to conserve power.) There are many other useful items lying around for your use. You are allowed to carry only seven items at one time — unless you can set one inside something else!

Circumstances sometimes arise, particularly with an inexperienced player, that will cause the player to die. There are some bats flying all over the place, and these bats are deadly! There is one sure repellant available somewhere out there. Stumbling in the dark or stepping into dark holes are other ways of doing yourself in.

Requires 48K.

Price: $29.95 diskette

GENESIS - THE ADVENTURE CREATOR

(Apple only)

Until now, if you wanted to write an adventure game, you needed lots of time and considerable programming skill. Such a task requires you not only to create a world – the fun part – but to write routines to keep track of everything taking place in it – the drudgery. Now however, there is GENESIS. GENESIS removes this drudgery from creating adventures. You design your world – GENESIS programs it.

GENESIS has two parts. The Creator allows you to create and edit your adventures. The Player allows you, or anyone else, to play any adventure you have created. After you get a feel for the system, you will probably be able to create a moderate sized game of about thirty-five locations in one to two hours – a great improvement over the weeks or months it would take were you doing the programming yourself in BASIC or another language.

Requires disk drive, 48K RAM.

Price: $49.95 Diskette

THE LABYRINTH OF ZYR

(PET only)

As you were casually wandering through your neighborhood forest one day, the evil minotaur ZYR captured you and trapped you in his labyrinth! If you're lucky you may find your way out safely!

The objective in THE LABYRINTH OF ZYR is to find your way through a randomly-generated labyrinth. You have the option of selecting the size of this labyrinth. Entering a 1 for the DIFFICULTY FACTOR will generate a 2 x 2 maze; entering a 2 will generate a 3 x 3 maze; and so on, up to 8 which will generate a 9 x 9 maze. It is a good idea to start with a small maze and work your way up to larger ones. You will enter at the bottom of the labyrinth and will have to search for the exit at the top. However, you view the labyrinth in "three dimensional" perspective as if you were really walking through it.

Runs in 8K. Will not run on Commodore 64.

Price: $17.95 cassette
$21.95 diskette

STARSHIP LANDING PARTY ADVENTURE

(Apple, TRS-80, and Atari only)

While on patrol, your starship suddenly encountered a severe cosmic storm. The shields snapped on automatically, protecting the ship, but the tremendous energy drain as the shields fought the storm burned out all the ship's power crystals. Limping along on battery power, your starship managed to reach an abandoned solar system and attain an unstable orbit around an abandoned mining planet. The orbit is decaying and your starship will reach the atmosphere and burn up in 12 hours. There is just enough power left to beam down one person, armed only with a hand laser, and then beam that person back up again with a supply of power crystals.

Unfortunately, the planet was mined out and abandoned years ago. There is a legend, however, that one crazy old miner working an isolated mine in a valley surrounded by high cliffs made a rich strike many years ago and never sold the crystals. He died many years ago without ever telling anyone where he hid the crystals he had found. What's more, rumor has it that he was so afraid of thieves that he left a series of traps at his mining camp to keep anyone from getting the crystals.

Uses full-sentence input and features move take-back.

Your job is to get those crystals! Requires 32K for TRS-80 and 48K for Atari.

Price: $15.95 Cassette
$19.95 Diskette

THE ORIGINAL ADVENTURE
(CP/M only)

This is an updated version of the classic adventure game which first appeared on the DEC computer. It is still one of the *largest* adventures available, and is still fun to play. Because DYNACOMP has spent little time in developing this package, we can offer it to you at a *very* low price. Requires 48K.

Price: $ 9.95 Diskette
$12.45 Disk

ZODIAC CASTLE ADVENTURE
(North Star and Apple only)

The ZODIAC CASTLE ADVENTURE has much the same program layout as the WINDMERE CASTLE ADVENTURE. This time you start in a glen near the castle and must find and accumulate treasures. The play is the same, but the treasures and circumstances are different.

Requires 48K.

Price: $29.95 diskette

PYRAMIDS OF GAR
(TRS-80 only)

Millions of years ago, the planet GAR was the home of some of the wealthiest and most advanced beings in the universe. Although their civilization has vanished, their wealth still exists.

In order to sateguard their wealth, the residents of Gar placed their gold, silver, and gems into pyramids, which they then placed in an endless maze protected by hovering guard robots. You are supplied with a vehicle which has four screens which show walls of the cube on all sides. You may move through openings in the walls by means of your keyboard controls. Your weapons may be used to shoot robots or to break through walls. You also have the option of using your vehicle's "jump" capability to get out of a closed cubicle. The walls may close while you are in a cubicle. Of course, you may jump and land on a robot and blow up, land on an exit tunnel and be ejected from the maze, or land in another closed cubicle. If you get lucky, you might even land on a treasure or find a fuel and ammo dump. Requires 48K.

Price: $15.95 Diskette

ATARI PROGRAMMING HINTS

LIGHT PEN POSITION

The horizontal and vertical positions of the light pen are stored in locations 564 and 565:

```
HOR= PEEK(564)
VERT= PEEK(565)
```

THE AXLON RAMDISK

You probably have seen this item advertised in magazines, but never have seen it in operation. It is great (though expensive).

The two nice features associated with the 128K AXLON RAMDISK are:

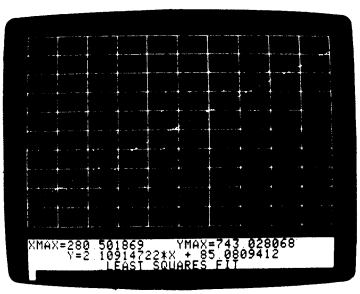
1. You can go back and forth between the DOS menu and BASIC programs without having to reload the program.
2. When the RAMDISK is configured as another drive, disk I/O is amazingly fast.

If you have a program which does a lot of disk access, then this device may greatly speed processing.

With regards to reliability, we have had absolutely no trouble using the AXLON hardware or software and delivery was fast, too.

TURN CURSON OR/OFF

POKE 752 with 1 to turn it off; 0 to turn it back on.



IDENTIFY ONE OF THESE PHOTOS

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

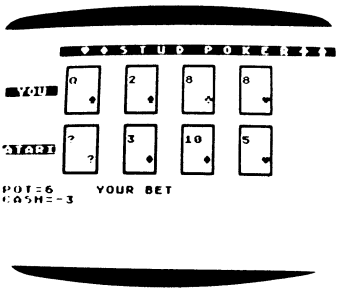
Contest rules may be found on page 97.

STUD POKER
(Atari only, 16K)

STUD POKER contains two menu-selectable versions of this popular game. One version displays all your cards and three of the computer's. You then bet on the cards that you see. The other version provides a round of betting after each card is dealt. You will find the computer to be a worthy opponent who occasionally bluffs but never cheats! STUD POKER employs all of the Atari's sound, color, and graphics capabilities and will run on 16K systems.

Price: $14.95 Cassette
$18.95 Diskette

Sample Display:



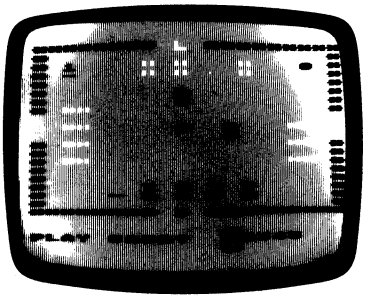
EUCHRE
(Atari only)

DYNACOMP's EUCHRE preserves all of the elements of this traditional card game while bringing the power of the computer into play. You and your computer partner are pitted against two seasoned computer opponents. You can order up the kitty, call suit, go it alone, and, of course, get "euchred". The pace is fast and the play quite good.

Requires 32K (cassette), 48K (diskette) and one joystick.

Price: $15.95 Cassette
$19.95 Diskette

Sample display:



BRIDGE MASTER
(available for all computers)

If you liked DYNACOMP'S BRIDGE 2.0, you will absolutely love BRIDGE MASTER. BRIDGE MASTER is a comprehensive bridge program designed to provide hours of challenging competition. Bidding features include the Blackwood convention, Stayman convention, pre-emptive openings, and recognition of demand bids and jump-shift responses.

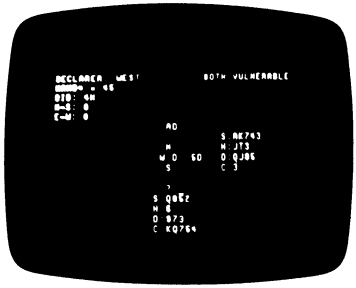
The program plays the North hand as your partner and East-West as your opponents. After playing a specific hand, you may replay the same hand, with the option of switching cards with your computer opponents. This feature allows you to compare your bidding and playing skills to BRIDGE MASTER.

A unique feature of BRIDGE MASTER is its scorekeeping capability. Points scored for each hand are calculated. Bonuses for game contracts and slams are awarded as in duplicate bridge. Doubled contracts are scored based upon a computer assigned vulnerability. Individual hand scores are tabulated and an accumulative score card is displayed at the conclusion of each hand played. The score card displays a summary of total hands played, total points scored, number of contracts made and set, and % bids made.

Requires 24K program memory (Atari version requires 48K). Available on disk only.

Price: $29.95 Diskette
$32.45 8" CP/M Disk

Sample display (North Star):



DOUBLE-DECK PINOCHLE
(TRS-80 only)

DOUBLE-DECK PINOCHLE is simply the fastest (machine language) and best-playing computer pinochle program available. You may either play in the learning mode or compete in a regular game. There are four players, with the computer supplying your partner and the opposing team. The game includes bidding, playing, scoring, and a HELP mode. If you like to "meld", you will love DOUBLE-DECK PINOCHLE.

Price: $19.95 Cassette
$23.95 Diskette

POKER PARTY
(available for all computers)

If you enjoy draw poker, then this is the software package for you.

POKER PARTY is better classified as a simulation than a game. As a simulation, POKER PARTY is an excellent (and inexpensive) tool for learning the subtleties of draw poker. As a game, it is simply fascinating!

POKER PARTY differs from most microcomputer poker games in the following two important ways. First, the level of play engaged by the computer opponents on the whole is quite high. Second, it is not just a two-handed game (how often do people play two-handed draw poker in real life?), but rather seven-handed. The usual rules of draw poker are followed, including a maximum of three rounds of betting before the draw (up to five cards), and at most three after. Aces may be used either high or low in straights, and there is a wild card.

The six computer players each have a different "personality" ranging from conservative to risk-taking. You can get to know your opponents with time, but it will require careful observation of the betting patterns. Your seating position changes from game to game. Sometimes you will follow a bluffer, other times he (she) will follow you.

Spend an evening with POKER PARTY for enjoyment, or practice for that next money game!

The POKER PARTY package also includes a 6 page manual describing how to play as well as providing information on strategies.

Requires 16K of program memory (Atari requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample display (Atari):

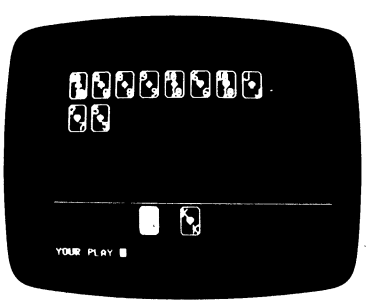
THE OLDE GIN PARLOUR (Gin Rummy)
(Apple II Plus, Diskette only)

This program is one of the nicest looking and best playing card games we have ever seen. The author has combined attractive graphics and sound into a program that is a match for the best Gin Rummy players around. The result is spectacular. This program is for one player against the computer. It allows knocking, laying off and all standard game conventions. The game is easy to learn, and the documentation includes some fascinating history on the game of Gin Rummy as well as a complete set of rules. THE OLDE GIN PARLOUR is simply one of the best computer card games available, and we are sure you will have hours of fun with it.

Requires 48K.

Price: $22.95 Diskette

Sample display:



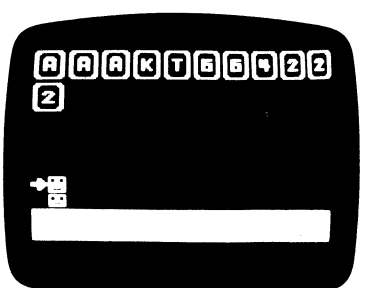
GO FISH
(Available for all computers)

GO FISH is the classic childrens card game, adapted for one player against the computer. The Atari and Apple versions use graphics which make the game suitable for play with small children. The CBM and Northstar versions will require more assistance from an adult because the presentation of the game is done with text. The game strategy is simple, yet provides an easy way to introduce children to the concepts of chance and analysis, as well as being an enjoyable and challenging game. It is also a pleasant way of introducing a child to the computer.

Requires 16K program memory space (Atari version requires 24K). Not available on Apple cassette.

Price: $14.95 Cassette
$18.95 Diskette
$21.45 8" CP/M Disk

Sample display (Atari):



BACCARAT
(Atari only)

BACCARAT is the casino game which was brought to popular awareness by Ian Fleming in his James Bond novels. Now you and your friends can learn this fascinating game with your computer as an opponent. Imagine a beautiful person on your left and the nefarious Ernst Stavro Blofeld on your right as you play to win a fortune! This game uses extensive graphics, sound and joysticks. You establish the initial amounts and betting limits, and then it is off to the gaming tables.

Documentation includes complete playing rules along with examples and strategy hints. For one to three human players.

Requires 24K.

Price: $18.95 Cassette
$22.95 Diskette

Sample display:

CRIBBAGE 2.0
(TRS-80 only)

CRIBBAGE 2.0 is a two-handed version of the classic card game, Cribbage. The standard rules of play and scoring are followed, and the points are announced using the traditional phrases. The score is visually shown on a standard 60-hole cribbage board which requires two "trips" to win.

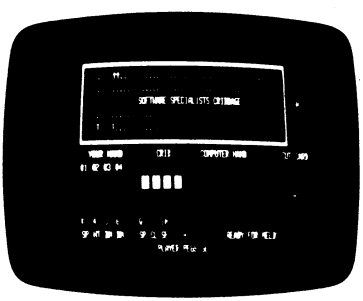
The computer is a worthy opponent in CRIBBAGE 2.0. The program features excellent graphics and assembly language sub-routines for fast response in determining crib cards and meld points. The ownership of the crib is considered to get a good crib determination, and you may ask the computer for help with your crib cards.

This is an excellent program for the cribbage player in search of a tough opponent as well as the beginner wishing to learn the game and its scoring intricacies.

Requires 16K, Model I only. See review in 80 Software Critique.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



BLACKJACK COACH
(Available for all computers –
except Atari and NEC NBASIC)

Learn and practice your blackjack skills with the "Coach" giving advice and consent. Test various playing and betting strategies. The automatic play mode uses either the basic count or the complete card counting method together with one of three betting methods. All playing options are included. Up to 6 decks per shoe. Learn to count cards to change bets and decisions. Numerous summary data displays plus up to 8 reports will reveal precisely which parts of your strategy work and which do not. Use of a printer is optional. Develop your own strategy modifications. "Practice on Screen Before Green $"

BLACKJACK COACH includes a 30 page tutorial manual which is a value in itself.

Requires 32K. Disk version requires 48K.

Price: $29.95 Cassette
$33.95 Diskette
$36.45 8" CP/M Disk

M-MASTER
(available for all computers)

The first computer version of the card game that is favored by members of Mensa, the "high IQ club", is now offered exclusively by DYNACOMP.

While easy to learn, just as chess is easy to learn, the High IQ game demands a different approach and strategy with each new hand. In many ways, the appeal of this game is the same as the appeal that high-stakes gamblers find in Old Maid, though the games are not related in any way. There are two levels of play. At the computer's best strategy level, it may be truly unbeatable; at the normal level of play, the human has a fighting chance if he is sharp enough and willing to take chances.

To our knowledge, this is the first time that the High IQ favorite has been offered as a computer game, and joins the broad DYNACOMP library of leading software.

Price: $15.95 Cassette
$19.95 Diskette
$22.45 8" CP/M Disk

POKER MACHINE

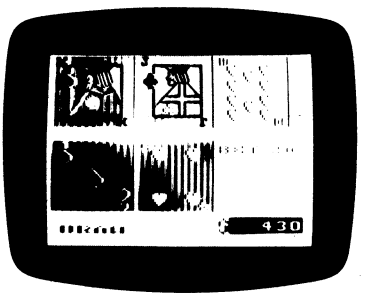
(Apple diskette only; 48K)

If you like five card draw poker and appreciate fine graphics, POKER MACHINE will surely please you.

POKER MACHINE simulates the card playing slot machines found in Las Vegas (and Atlantic City) casinos. The preset odds employed in the simulation follow those used in the casino machines, thereby presenting a realistic representation. While POKER MACHINE offers the opportunity to have harmless fun, you may also try out betting strategies on it before risking money in those "real" machines.

Price: $19.95 Diskette

Sample display:



BRIDGE SCORER

(Osborne only)

The duplicate bridge player is often faced with the choice of either going home and wondering who won, or staying and waiting (working) through the scoring and looking for reasons why the scores did not balance. Now you can use BRIDGE SCORER instead.

BRIDGE SCORER was designed to provide rapid and easy scoring for the session. It automatically summarizes each board after all plays are entered, and tallies the overall results after the last board's results are available. The results are shown on the screen, saved on disk, and (optionally) printed.

You may define the players' names, type of movement (e.g., Mitchell), number of tables, number of boards to be played, and sit out round (if necessary).

The board scores include board number, NS/EW number, the bid and declarer, doubling/redoubling, and results. The program will calculate the scores and tally the results.

Be the hit of the party by bringing BRIDGE SCORER!

Price: $29.95 Diskette

WARRANTY INFORMATION?

If you are interested in finding out more about our warranty policy, please see page 108.

NEED SOME SUPPLIES?

If you need supplies, see page 98 for the best discount prices on disks, diskettes, plastic storage boxes, and vinyl pockets.

FOREST FIRE
(Atari only)

An exciting color graphics simulation!

You are the new fire coordinator assigned to protect prime forest land in southern California. The fire tower that you occupy is totally isolated. Fortunately, this tower is outfitted with the latest in fire surveillance equipment. Recently, a fire scanner was installed to automatically signal the start of any fires in your district. The device also tracks the fire's progress and detects changing conditions that may affect the fire's intensity and spread. A special communications satellite feeds various information to the scanner on an hourly basis and provides a computer enhanced view of the terrain. From this, you will be able to identify important structures that should be protected and to verify any orders sent out to dispatch men and equipment to the scene. The scanner output identifies the location of woods, dry brush, lakes, your tower, a gasoline tank farm and the Governor's estate.

Of course, you must take whatever action is necessary to protect the fire tower that you are in. The lakes will act as natural barriers to fire unless they are filled with burning gasoline from explosions at the tank farm.

The scanner will visually display the fire at three levels of intensity. A new fire, raging fire and one burned down to embers are shown.

Naturally, weather conditions will affect how fast and where a fire will head. Your scanner is equipped with sensors that will report any change in conditions. A warning tone will sound at the time. Wind direction is given so that you may anticipate which direction the fire will spread.

As you can see, the simulation is very complete, and, as shown below, the graphics are excellent.

Requires 24K and one joystick.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:

SPACE LANES
(available for all computers)

SPACE LANES is a simple, but exciting, simulation of the economics of the space transportation industry. The object is to establish and expand space transportation companies in a competitive environment. The success of a particular company is measured by the extent of its space lanes. This success is reflected in the value of its stock. The player participates in this industry by helping in the formation of companies and the extension of the space lanes, and the financial rewards accrue from wise choices in the purchasing of stock.

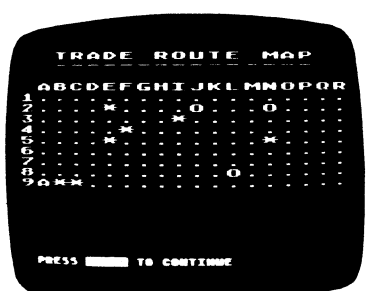
Hal, the computer, is one of the players. Up to three additional players are allowed. The simulation consists of 50 playing rounds, after which the net worth of each player is evaluated to determine the winner.

The galaxy is displayed on a 9 by 18 grid. This map shows star bases, space lanes, and remote space stations. Up to five companies may be in operation at one time.

Requires 16K (Atari version requires 24K).

Price: $10.95 Cassette
$14.95 Diskette
$17.45 8" CP/M Disk

Sample display (Atari):



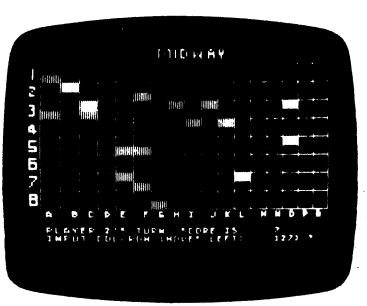
MIDWAY
(Atari only)

MIDWAY is a naval battle simulation. It takes place in the Pacific Ocean. The battle is between two navies each having ten battleships. Each navy possesses one aircraft carrier, one tanker, two battleships, three destroyers, and three submarines. The game may be played for up to 136 moves by each side at which time all possible positions will have been played. The game may be ended early as a special option. The object of the game is to find and destroy as many of the opponent's vessels as possible within the agreed upon number of turns. The opponent may be the computer or another person. A classic board game, but on a computer.

Requires 32K.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:

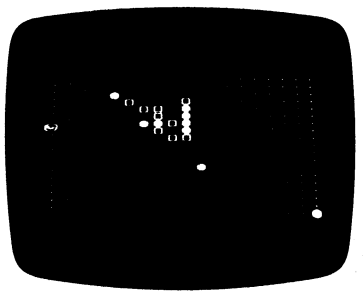


GOMOKO II
(Atari only)

GOMOKO is an ancient oriental game which is played on a 19 by 19 grid. In DYNACOMP's version, you are pitted against a formidable computer opponent. Various skill levels can be chosen, and the graphics are very nice. Runs in 16K, requires a joystick.

Price: $14.95 Cassette
$18.95 Diskette

Sample Display:



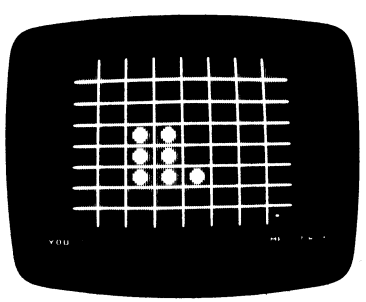
COMPUTHELLO
(Atari only)

COMPUTHELLO is an exceptionally powerful and versatile Reversi player. It offers a significantly (to some, it is frustratingly) higher level of play than CHOMPELO, as well as three modes of play: #1 Human vs. Computer; #2 Human vs. Human; #3 Computer vs. Computer (which is very interesting!). It also offers a handy hint option which allows players to pass when there are no legal moves available or will find and recommend a move if there is one. Each game is randomized to vary COMPUTHELLO's strategy and of course illegal moves are prevented in all modes and levels.

Requires: 24K (cassette), 32K (diskette), Atari BASIC cartridge and one joystick.

Price: $19.95 cassette
$23.95 diskette

Sample display:



STAR CON
(North Star and CP/M only)

STAR CON is a computer board game in which the objective is to conquer all 20 planets which exist on a 20 x 20 star map. The planets resist you by using their resources to build more effective defenses with time. You, in turn, can construct factories on captured planets to enhance your aggressive capability. You can move people and supplies, send out scouts, etc. Games can be saved and reloaded. The star map can be varied to create different scenarios. All of this leads to many hours of thoughtful entertainment. Requires 48K.

Price: $19.95 Diskette
$22.45 8" CP/M Disk

CASINO CRAPS
(Atari only)

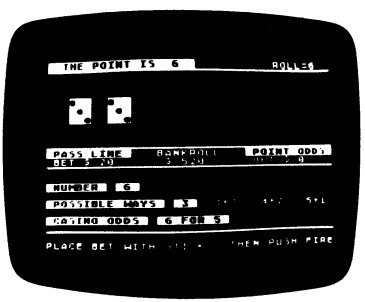
Whether you are a seasoned "crap shooter", wish to learn the game of craps as played in the casinos, or just want to have fun rolling the dice, CASINO CRAPS will surely interest you. CASINO CRAPS will teach you:

- How to play the game of "craps"
- How to take advantage of the odds
- How many ways a number or point can be made
- What odds casinos offer on the various numbers
- The pay-offs for different odds
- The possible bet losses
- The winning combinations
- The various "craps" combinations
- And more . . .

Requires 16K (Cassette), 24K (Diskette).

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



SEA WAR
(Atari only)

Quite often the best basis for a new computer program is a classic board game. The concept for SEA WAR came from "battleship". We have added graphics, sound and a formidable (but honest) computer. This is a good game for the 5-12 year old group, and many adults also find it interesting. Requires 48K.

Price: $12.95 Cassette
$16.95 Diskette

QUINTOMINOES
(Atari only)

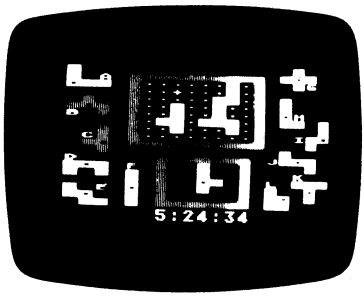
QUINTOMINOES is fashioned after DYNACOMP's original and popular program, NOMINOES JIGSAW. This new version is designed to be easier to play and to have wider appeal than the previous program.

The object in QUINTOMINOES is to lay down shapes on a grid in such a manner that they connect correctly. Using the joystick and control keys, you may move a shape to a position, rotate it, and flip it in both the horizontal and vertical directions.

QUINTOMINOES is an exceptionally nice way to introduce children to computers and concepts in plane geometry. Runs in 16K.

Price: $12.95 Cassette
$16.95 Diskette

Sample display:



BACKGAMMON 2.0
(available for all computers)

This program (by Giga, Chicago, IL) tests your backgammon skills and will also improve your game. A human can compete against the computer or against another human. The computer can even play itself! Either the computer or human can double or generate dice rolls. Board positions can be created or saved for replay. BACKGAMMON 2.0 is played in accordance with the official rules of backgammon, and is sure to provide many fascinating sessions of backgammon play.

Requires 16K of program memory (Atari requires 24K).

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample Atari display:

Color information did not photograph!

CHESS MASTER
(North Star, CP/M, and TRS-80 only)

CHESS MASTER is a computer program which will challenge your chess playing ability with its aggressive style of play. Written in assembly language (by SOFTWARE SPECIALISTS of Norco, California), this program employs the full graphics capability of the TRS-80 and also provides the North Star user (either Z80 or 8080 microprocessor) with two different board sizes to select from.

You may choose between five different playing skills for your computer opponent, ranging from beginner (but a tough opponent when playing "lightning" chess!) to expert. Besides providing for King or Queen-side castling, en passant captures and pawn promotion, CHESS MASTER also allows you to preset the board in any configuration which you may find of interest. This allows for the examination of book situations or the replaying of interesting positions occurring during previous games.

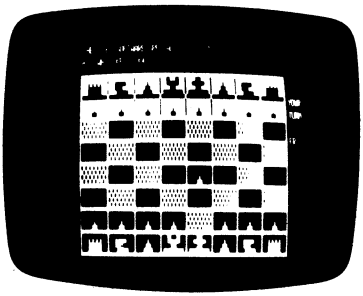
Moves are conveniently made by entering the number of the square you are moving from and the number of the square which you are moving to. The program checks all moves for legality and then displays the moves in standard chess notation.

Requires 16K. TRS-80 version available only for Model I. Not available for IBM PC.

See review in On Computing.

Price: $19.95 Cassette
$23.95 Diskette
$26.45 8" CP/M Disk

Sample display (TRS-80):



FOUR TOES
(Apple only)

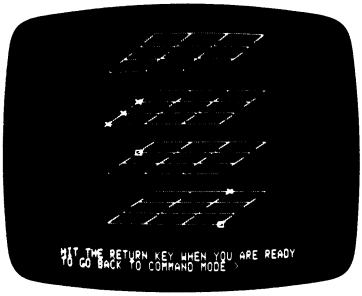
FOUR TOES is a game played by two people on a three dimensional 4 x 4 x 4 game board. The two players can be both human, or a human against the computer. The object of the game is to get four makers in one of the seventy-six possible rows.

Each player has the choice of three strategic maneuvers. The first, and easiest, is to create two markers. The second is to remove an opponent's marker and to create one of your own. The third choice is to establish a permanent destruction zone in which no other marker can survive once it has been activated.

Although the rules are simple, the play is complicated and very challenging, particularly because of the three dimensions.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



COMPU-OPOLY
(TRS-80 only)

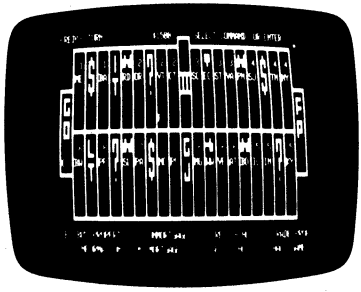
COMPU-OPOLY is a computerized board game which has rules which are similar to the Parker Brothers game, MONOPOLY™. The object of the game is to bankrupt your opponents by the skillful development and trading of property. COMPU-OPOLY can accommodate up to eight players. Each of the eight can either be a human or a computer player. For example, you could play against three computer opponents, or four computer opponents could automatically play against one another.

The computer rolls the dice and acts as both banker and games keeper. The graphics are cleverly used to show the entire board, including the properties, players and player status. The computer players decide quickly, and the pace is fast (though it may take hours to finish a game).

COMPU-OPOLY is a very well written program and is very impressive for what it does in 16K memory. Requires 16K (cassette), 32K (diskette).

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



HINT
(Apple cassettes)

Apple cassettes load easier if you start the load just after the "blip" at the beginning of the tone. A volume level near 2 (out of 10) with the "tone" all the way up is a good place to start trying to find the best playback level.

CHECKERS 3.0
(PET/CBM only)

CHECKERS 3.0 is a challenging machine language program for playing checkers against your PET/CBM. Ten look-ahead levels of play are provided for the computer's response. The associated response times are:

LEVEL	TIME
0	5 seconds
1	45 seconds
2	5½ minutes
3	40 minutes
4	2 hrs. 30 min.
10	??

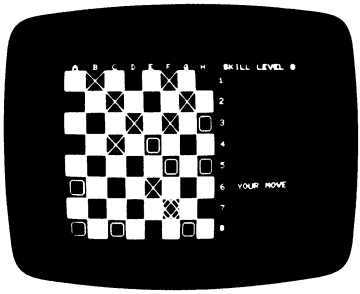
At level 2 you are facing a very formidable opponent!

CHECKERS 3.0 supports all the standard checkers rules, including kings and forced moves. This is an excellent game for both the child and the adult.

Requires 16K. Does not run on Commodore 64.

Price: $16.95 Cassette
$20.95 Diskette

Sample display:



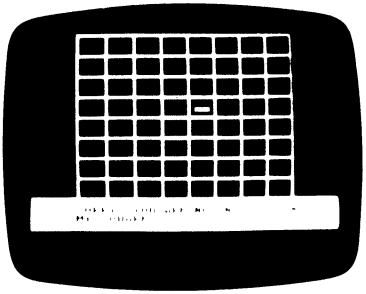
CHOMPELO
(Atari only)

CHOMP-OTHELLO consists of two games. CHOMP is in reality a two-dimensional version of Nim. OTHELLO is a computer version of a board game called Reversi. In CHOMP, the playing board is a big cookie; the player defines the cookie's size in terms of rows and columns. In the upper left corner is a poison square. To take a chomp, you indicate the row and column of one of the squares of the cookie. All squares below and to the right of that square disappear. The one who chomps the poison square loses the game.

In OTHELLO, you try to place your pieces on an 8 x 8 board so that it outflanks the computer's pieces. If successful, those pieces become yours. Whoever captures all of his opponent's pieces first is the winner. OTHELLO has two levels of play and is a very tricky program! The graphics, sound, and color in this package are exceptionally well done. Requires 16K.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



HYPERDOM
(TRS-80 only)

HYPERDOM is a dominoes-like game designed to offer the thrill of the arcade plus something more. It requires graphic vision and coordination, as well as strategy and luck.

Out of 55 HYPERDOM pieces, 10 are assigned to each player at random. Then, it's a matter of finding a piece that fits in the line, within the time allotted for the move. Hopefully you will choose the piece which will force your opponent to pass. Or maybe you will pick the piece that fits both ends of the line and brings a 5 point bonus. If you are playing at the fast game speeds, just finding a piece that fits may be too much of a challenge. If you choose to try playing against the computer, you will find that it always finds the piece in time. Very often it finds the perfect piece. Requires 16K.

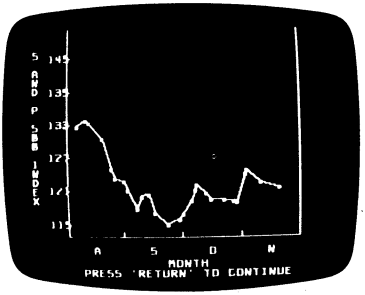
Price: $14.95 Cassette
$18.95 Diskette

Sample display:

IDENTIFY THIS PHOTO

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Contest rules may be found on page 97.



IDENTIFY THIS PHOTO

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Contest rules may be found on page 97.

MANAGEMENT SIMULATOR

(available for all computers)

This program is both an excellent teaching tool, as well as a stimulating intellectual game. The MANAGEMENT SIMULATOR (by Giga, Chicago, Illinois) is based on similar games played at graduate business schools by teams of managers. The game realistically models the economic marketplace of the business world.

Each player, or team of players, controls a company which manufactures three products. The company competes against other companies, each of which sells three similar products. Each player attempts to out-perform his competitors by selecting what he perceives to be an optimum operating strategy. This strategy includes setting the following: selling price, per unit manufacturing costs, production volumes, marketing and design expenditures, plant and securities investments, as well as stockholder's dividends. The most successful firm is the one with the highest stock price when the simulation ends. The computer can also compete as a "pacesetting company". This feature is most useful when playing alone.

The MANAGEMENT SIMULATOR can either be played on-line or off-line and data from unfinished games can be saved on disk for continued play at another time. Each player will be able to study an income statement, a chas-flow report, a balance sheet, a plant report, various product reports, past- and projected-business indexes, or a competition report. It is from this information that the player ccan make suitable business decisions.

MANAGEMENT SIMULATOR comes with a 9-page instruction manual which includes a sample playing form.

Requires 16K. (Atari version requires 24K, TRS-80 version requires 32K.)

Price: $25.95 Cassette
$29.95 Diskette
Sample display (Atari): $32.45 8" CP/M Disk

BUY LOW - SELL HIGH

(TRS-80 only)

BUY LOW - SELL HIGH is a stock market and investment simulation for up to 3 investors (players). The goal is to increase your net worth from an initial $10,000.

Investment decisions are needed in each year of a 10-year period. Investors have choices between buying or selling stocks, mutual funds, savings and obtaining loans. The stock prices change realistically, but each run will give different results. Interest rates for savings accounts and personal loans fluctuate.

You may ask for investment advice from several sources, with varying degrees of accuracy. The successful investors must figure out which is poor advice and determine their own investment strategy.

BUY LOW - SELL HIGH is for adult entertainment and does not require someone with a financial background to enjoy. However, this program is an effective learning tool to get acquainted with investment decision making and for understanding money management principles.

All the accounting is done by the program. You are given stock information, financial statements, records and reports of your income and expenses each year. These reports together with the advice that is available will help you manage your finances and increase your net worth.

Principles learned with this program will be of value for the "real thing", plus, you will enjoy yourself. Requires 32K.

Price: $19.95 Diskette

Sample display:

SPECULATION

(TRS-80 and CP/M only)

DYNACOMP's MANAGEMENT SIMULATOR has proven to be so popular that we decided to add a stock market simulation to our product line. Here is the market you will encounter:

There are thirty three companies grouped within eleven major industries. The companies encompass three risk ranges: growth, investment and speculative. Each player (two to four players) starts with $15,000 in capital. Companies can merge, go bankrupt, or be taken over (by a player obtaining majority control). Rumors are given regarding splits, price changes and merges. There are annual reports, tax audits, etc.

SPECULATION has much the same fascination as the time honored board game MONOPOLY™. SPECULATION is more complicated, but the computer handles the accounting chores. Requires 16K.

Price: $19.95 Cassette
$23.95 Diskette

HAVE YOU THOUGHT ABOUT . . .

our low prices on disks, diskettes, and cassettes? They're a real bargain — a nice gift for a computerist friend, too.

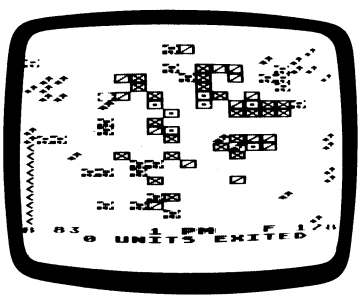
LEIPZIG 1813
(Atari only)

LEIPZIG 1813 is a one-player simulation of the first day of the Battle of Leipzig in Austria during 1813.

Using a joystick, the player directs movement and artillery bombardments of the combined army of the Allied nations against the computer controlled French army. LEIPZIG 1813 is a corps-level strategy game using standard military symbols to depict the Infantry, Cavalry, and Artillery units involved in the struggle. Leipzig's attack option, seven (7) levels of difficulty and three (3) levels of victory can provide the novice wargamer with an exciting game or an experienced Field Marshall with a tough, challenging battle. LEIPZIG 1813 makes wargaming easy. The computer calculates odds, combat results, and Zones of Control, as well as commanding the French army against you. This simulation requires strategy and tactical maneuvering. Average playing time is approximately 1 hour per battle. Runs in 32K (cassette), 48K (diskette). One joystick required.

Price: $29.95 Cassette
$33.95 Diskette

Sample display:



WATERLOO 1815
(Atari only)

WATERLOO 1815 is a one-player simulation of the Battle of Waterloo. Using a joystick, you command Napoleon's Grand Armee' against the British and Prussian forces. You are even able to direct artillery bombardments against enemy units within the range of your guns.

WATERLOO 1815 uses standard military symbols to depict your infantry, cavalry, and artillery divisions. You have 19 game turns to either decisively defeat the Allied forces or to exit as many units as possible. Ten levels of difficulty are provided, ranging from a doubled French combat strength to additional Allied combat strength. There are also three levels of victory. Additionally, the player has the option of disposing with the Prussian army before the game begins.

WATERLOO 1815 takes the drudgery out of wargaming. The computer calculates combat odds, combat results, and zones of control, as well as commanding the British/Prussian forces against you. This simulation requires strategy and tactical maneuvering. Average playing time is one hour per battle.

Cassette version requires 32K; diskette version requires 48K. One joystick required.

Price: $29.95 Cassette
$33.95 Diskette

Sample display:

SHILOH 1862
(Atari only)

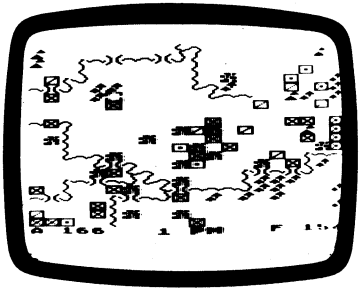
SHILOH 1862 is a brigade level one-player simulation of the first day of the Battle of Shiloh during the American Civil War. Using a joystick, the player directs movement and artillery bombardments of the Union Army against the computer controlled Confederate Army. The Union player is faced with the same problems General Grant had from the strong surprise attack by the Rebels and mass desertions from his ranks.

The player wins by preventing the Rebel Army from occupying Pittsburg Landing. SHILOH 1862 uses standard military symbols. It allows the player to design his/her own level of difficulty. The computer calculates combat odds and results, Zones of Control, as well as commanding the Rebel forces against you. This simulation requires strategy, tactical maneuvering, and luck. The average playing time is approximately 1.5 hours per battle.

Cassette version requires 32K; diskette version 48K. One joystick needed.

Price: $29.95 Cassette
$33.95 Diskette

Sample display:



THE DYNACOMP BATTLE TRILOGY

Are you a wargamer? Do you like Atari's EASTERN FRONT? If so, you will be delighted with each game in DYNACOMP's battle trilogy: WATERLOO 1815, LEIPZIG 1813 and SHILOH 1862. Each of these simulations uses standard military symbols and pits you against a tough computer opponent. Each program, after compacting and optimizing the code, is *twice* as large as the very popular EASTERN FRONT. In short, both from a graphics and strategy viewpoint, these games are *excellent.*

Since many will want the complete set, we offer the following package price:

BATTLE TRILOGY: Three cassettes: $79.95
Three diskettes: $89.95

BATTLEFIELD!!!

(available for all computers except North Star DOS/BASIC)

BATTLEFIELD!!! is actually eight games in one. It is based on the eight disk war games set originally distributed by Xitron Systems for the North Star computer. A year ago DYNACOMP acquired the publishing rights for this software and for all conversions to other computers. During the process of translation we found that the essential features of all eight games could be combined into one group of programs which would fit on a single disk. We named this combination program BATTLEFIELD!!!

BATTLEFIELD!!! is a tactical simulation of war. You may choose one of eight battle terrains on which to play. The combatants have armies composed of both infantry and armor. The aggressor has thirteen armies, the defender, ten. The terrains include mountains, swamps, plains, slopes, rough ground and woods. The game is played by turns. During each turn a given side can move and shoot with each army. Then the opportunity switches to the other side. A particular game can end one of three ways: Time has run out; the aggressor has gained a chosen number of victory points (by damaging/destroying armies); the target has been reached.

Although BATTLEFIELD!!! is best played with two people, our programmer found that it was also very interesting to play against yourself. For those interested in a game of strategy combined with excitement, this is a good choice. Requires 48K.

Price: $23.95 Diskette
$26.45 Disk

THREAT FORCE

(Atari only)

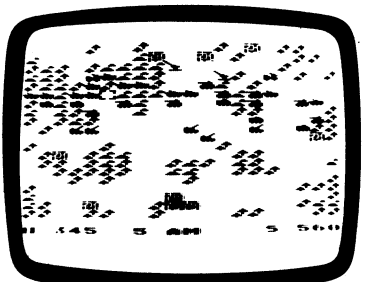
THREAT FORCE is a battalion-level, one-player simulation of a hypothetical battle between U.S. Army forces in Europe and invading Soviet/Warsaw Pact forces. The player controls the American units and may choose to defend with either a mechanized infantry division or an armor division. The THREAT FORCE, controlled by the computer, is composed of a motorized rifle division and a Soviet tank division. The player uses a joystick to direct the movement and artillery bombardments of friendly units and to check the attack and defense strengths of enemy units. To win, the American forces must prevent the Soviets from capturing the city of Kreigsden. THREAT FORCE uses the Atari's special capabilities to show tanks, armor, etc. You design your own level of play difficulty by modifying the combat strength of each unit.

Wargamers and non-wargamers alike will enjoy THREAT FORCE. You need not know anything about wargaming to play this game. The computer will make all of the necessary calculations and execute all movement and combat actions; you simply give the orders. THREAT FORCE requires strategy, tactics, and luck. Average playing time is one hour per battle.

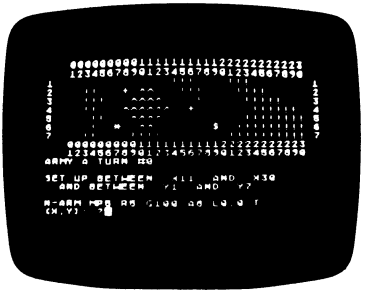
Requires one joystick, 32K (cassette), 48K (diskette).

Price: $29.95 Cassette
$33.95 Diskette

Sample display:



Sample displays:



SUBMARINE COMMANDER

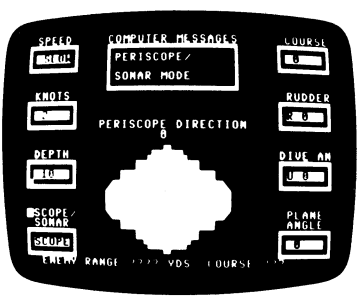
(PET only)

SUBMARINE COMMANDER is a "real time" submarine simulation. The author has had hundreds of hours of experience at the helm of a submarine and has brought this experience together to make this a highly realistic and challenging simulation.

All major submarine movement characteristics and attack limitations have been faithfully incorporated into the program and the enemy ship's course and speed are randomly selected. Because this is a real-time program, care must be taken when firing a torpedo; that is, "leading" must be taken into account as the ship will continue to move after the torpedo has been fired. The visual display is exceptionally good.

Price: $15.95 cassette
$19.95 diskette

Sample display:



SUPER SUB CHASE

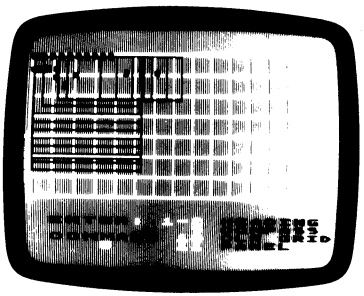
(Apple and Atari only)

SUPER SUB CHASE is a game for one or two players. Take over the controls of a destroyer in search of a submerged enemy submarine. The only clues you will receive are from your sonar, and you will need a good memory and powers of deduction to find the sub in your territory. This is a high resolution graphics simulation which makes good use of the Atari special character sets, sounds, and mixed graphics features to produce an interesting and challenging game for all ages. All commands are entered through the joystick ports, which makes playing the game a pleasure. Several options are available to make the game very interesting and challenging. All in all, this is a fun game which shows off some of the powerful graphics power of the Atari.

Requires 24K.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



IRONCLADS

(48K CP/M systems only; e.g., Osborne, SuperBrain, NEC, North Star)

IRONCLADS is a simulation of naval strategy and tactics between steam and wind driven warships of the 1860's through 1890's. Although originally designed for two players, single play against yourself is possible.

The simulation is very complete and realistic. Each side consists of a flotilla of ships. Each ship is characterized by its speed capability, seaworthiness (e.g., damage level) and fire power. The gunnery is very nicely modelled in terms of there being four batteries (forward, aft, port, starboard) on each ship, with each battery capable of firing different weight shells and having limited fire arcs. Ships can be trapped against the coast line or caught in port. You can even attempt to ram if all else fails.

With IRONCLADS you will gain an appreciation of the strategy and tactics involved in engaging in sea battle.

Price: $29.95 Diskette
$32.45 Disk

PLANETS
SELECT BY NUMBER
1) R.A. AND DECLINATION
2) MARS OPPOSITIONS
3) MERCURY AND VENUS ELONGATIONS
4) MERCURY AND VENUS CONFIGURATIONS
5) MERCURY AND VENUS RISE AND SET
6) PLANETS/SUN/MOON RISE AND SET
7) HORIZON PLOTS - STARS, MOON, SUN, PLANETS
8) PLANET/SUN/MOON FINDER
9) JUPITER'S SATELLITES
10) RETURN TO MAIN MENU
?

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Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Contest rules may be found on page 97.

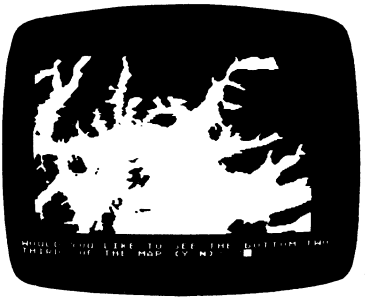
VALDEZ

(available for all computers)

VALDEZ is a simulation of supertanker navigation in the Prince William Sound area of Alaska. It contains a detailed analysis of ship response characteristics, as well as a model of tidal patterns in the Sound. Navigation is aided by a variable range radar display with shows the land masses and other traffic (ships and icebergs). A unique feature of this simulation is the 256 x 256 element map employed. Sections of this map are peeked at using the radar display. This map feature is unique and greatly enhances the realism of the program. VALDEZ provides an interesting and educational exercise in ship navigation.

The VALDEZ package includes a 12 page manual which fully describes program operation. Requires 16K of program memory (Atari requires 24K). See reviews in 80 Software Critique, Creative Computing and Personal Computing.

Price: $19.95 Cassette
$23.95 Diskette
Sample display map (Atari): $26.45 8" CP/M Disk



MONARCH

(available for all computers)

MONARCH is a brain teaser! You have just been elected the Ultimate Ruler of your own country. It is your job to decide the country's budget. Your country's income comes from farm produce and tourism. Half your land is farmland while also having excellent mineral content. It is up to you to decide how to manage the country's economy and to redistribute the wealth to your countrymen. Can you keep your countrymen happy enough to last in office for eight years?

Requires 16K for all versions.

Price: $14.95 Cassette
$18.95 Diskette
Sample display:

YEAR IN OFFICE:1
57461 RALLODS IN THE TREASURY
503 COUNTRYPERSONS
1966 SQ. MILES OF LAND
INDUSTRY WILL BUY LAND FOR
191 RALLODS PER SQ MILE
LAND CURRENTLY COSTS
14 RALLODS PER SQ MILE TO PLANT
HOW MANY RALLODS DO YOU WISH TO SPEND
ON POLLUTION CONTROL

STARBASE 3.2

(available for all computers)

STARBASE 3.2 is a new and exciting program related to the classic space simulation many have played on "large" computers. This version is a significantly enhanced program, is more complex, and is more challenging. It was written by a visiting Croylin who decided to give his side a chance. The Empire gets even!

The Croylins have learned from their past experiences. Their task force is now composed of both light (the old style) and heavy cruisers. Some of the heavy cruisers have a proton torpedo deflection device and must be attacked from their weak side or with lasers. The croylins no longer wait to be fired on, but may initiate a battle. They also attack starbases in distant quadrants without warning and have enough fire power to eventually capture those bases unless the Invincible goes to the rescue.

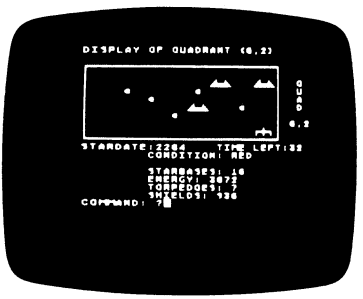
The Croylins now fight battles with a much better strategy. For example, they move. Sometimes they will move behind stars and hide. Other times they close in for a close-range laser attack. Croylin heavy cruisers sometimes start a battle with low energy blasts, trying to give the impression of a light cruiser. However, when the Invincible closes in for a laser kill . . . surprise!

Anyone who enjoys Star Trek™ simulations must play STARBASE 3.2.

Requires 16K program memory space (Atari requires 24K).

See reviews in A.N.A.L.O.G., 80 Software Critique and Game Merchandising.

Price: $13.95 Cassette
$17.95 Diskette
Sample Display (Atari): $20.45 8" CP/M Disk



SPACE EVACUATION

(available for all computers)

How many people can you evacuate from Earth before the sun explodes? Your computer becomes the control console of a giant spaceship in this exciting simulation as you determine which worlds can be colonized, make those worlds habitable, and transport people through space. You have 500 years for your mission, but your ship is limited to the speed of light, and colonization takes time. Choosing the best travel routes and colonizing procedures can be critical. The goal is to save everyone. However, the highest recorded score is 97%. Can you do better?

Requires 16K of program memory
(Atari version requires 24K)

Price: $15.95 Cassette
$19.95 Diskette
$22.45 CP/M Disk

FLIGHT SIMULATOR

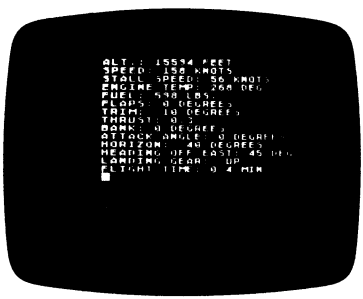
(available for all computers)

Learn from this realistic, mathematical simulation which allows you to take-off, fly, navigate, and land an airplane. The program employs kinematic aerodynamic equations, as well as applies the characteristics of a real airfoil to simulate the response of flying machines ranging from gliders to space shuttles. Unlike most arcade-like animations, FLIGHT SIMULATOR realistically portrays the problems associated with stalls, landing with the nose wheel first, cross winds, etc. You can practice touch and go landings, take a cross-country trip, or just practice exercising the flight controls; flaps, trim, elevators, bank, and throttle. A program for the thinker!

FLIGHT SIMULATOR is supplied with an extensive 27 page manual which fully describes using the program. The manual also contains detailed explanations of many of the technical aspects of the simulation.

See review in Computronics. All versions (including Atari) will run in 16K.

Price: $19.95 Cassette
$23.95 Diskette
Sample display (North Star): $26.45 8" CP/M Disk



YACHT RACE

(Atari only)

YACHT RACE is a tactical game of navigation, sailing knowledge, and boat-handling skills. Using paddles (no pun intended) or joysticks, two yachts are sailed around a triangular course in a race to the finish. To achieve maximum speed, the skippers use controllers to steer the yachts and to trim sails according to the direction and speed of the wind. Hazards include rocks, course marks, a ferry, the beach, and collision with your opponent's yacht. Five courses and four degrees of difficulty may be selected. Compete against your own best time or against another player for a selected course.

Requires 48K, two joysticks or paddles.

Price: $19.95 Diskette

TALKING TYPEWRITER

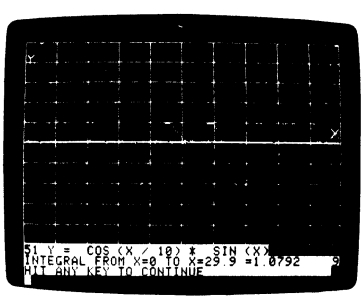
(Apple only)

Here is a package which combines the Apple's graphics and sound capabilities to teach the alphabet, numbers, and the keyboard layout to young children (ages 3 to 8). The player must press the correct key to launch a missle towards a moving target. There are two prompts for the key. The first is a hi-res graphical display of the keyboard with a key "lit up". The second is the name of the key *spoken!* No special hardware is required for this speech ability, just the software smarts of TALKING TYPEWRITER. After the key cue is displayed and spoken, the player must press the corresponding key on the real keyboard. If successful the player is rewarded with an opportunity to shoot a rocket at a passing blimp, also shown in hi-res graphics. If there's a hit, there is an explosion. Then the sequence repeats, but with a different key.

There are two reasons for getting TALKING TYPEWRITER. The first is that it is educational. The second is to hear your Apple talk!

Requires 48K

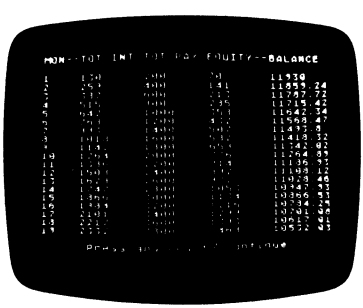
Price: $19.95 Diskette



IDENTIFY ONE OF THESE PHOTOS

Identify this photo and take $2.00 off your order for $20.00 or more worth of software or books.

Contest rules may be found on page 97.



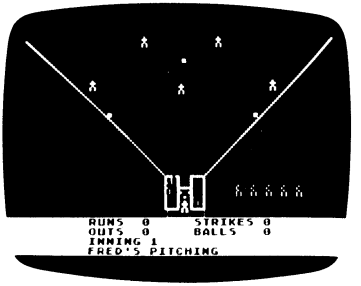
CACTUS LEAGUE BASEBALL
(Atari diskette only)

CACTUS LEAGUE BASEBALL is an exciting and new approach in two player (you can also play against yourself!) baseball for the Atari computer. You control the pitching, hitting and fielding of the New York Yankees as they play their archrivals the Milwaukee Brewers. You pitch fastballs, slowballs, curves, etc. You must avoid pitching to the power zone where one swing could challenge your fielder to steal a home run ball from clearing the center field wall. You need speed and dexterity at the joystick to make this kind of clutch grab.

This is head to head baseball. The game keeps track of all statistics ... strike outs, walks, singles, doubles, triples, hitting percentage, earned run average and many many more. All statistics are stored on disk for a lasting record. Fifty-four individual games may be stored on each disk and with three disks you have a 162 game pennant race. Every game's statistics can be individually displayed on your TV screen or the entire season can be printed out in ledger form on your printer. There are four levels of play, walk on to allstar. So, whatever skill level you're at, you can start playing now!!! Requires two joysticks, 40K RAM.

Price: $19.95 Diskette

Sample display:



ROLLERBALL
(Atari only)

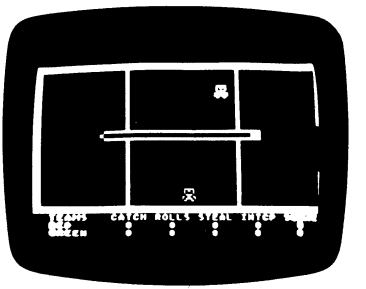
ROLLERBALL is an exciting two player combat game for the ATARI computer. The game portrays the year 1997. The corporations of the world have united to eliminate the unprofitable events of society. There are no longer any wars. There are no politicians. There are no countries. There is only the CORPORATION and the corporate contest ... ROLLERBALL.

You and your opponent race after the rollerball which is fired onto the rink by a launch cannon. Your objective is to score by throwing the rollerball into a moving goal. Your opponents will try to stop you anyway they can. Each player can hurl, steal, intercept, catch and punch. This is a contest of extreme strategy and brute force. Contests can be played at three levels: COMBAT, SEIGE, and SUDDEN DEATH.

ROLLERBALL is available on diskette (24K) of cassette (16K). Requires two joysticks.

Price: $17.95 Cassette
$21.95 Diskette

Sample display:



CHIRP INVADERS
(PET/CBM only)

You are the captain of the spaceship, Columbia, represented by the *. Your goal is to pilot your ship from home (H at the screen bottom) to the UUF space station (at the upper right (represented by open circles). The Chirps will try to stop you by several means:

1. They may directly attack with Chirp missiles (which are represented by @). You must destroy these with your laser cannon. After you destroy a Chirp missile, remnants of your cannon fire remain (represented by +). If a meteor strikes these remnants, you get a bonus.
   If you do not destroy a Chirp missile in time, it will destroy one of your ships.

2. CHIRP NET (represented by X) – The Chirps erect more of this net with each turn. You may clear part of the net with each turn by "POPPING" it. Hitting the Chirp Net with your ship will result in the destruction of your craft.

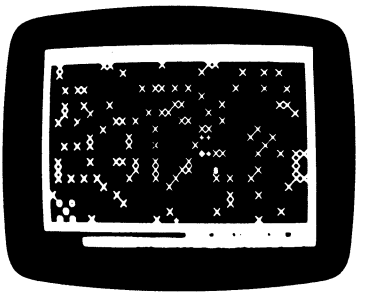
3. DEATH RAYS – These rays fire at random from the cannons at the bottom of the screen. If they strike your ship, they will destroy it.

As you can see, CHIRP INVADERS makes good use of the graphics capabilities of the PET/CBM computer.

Does not run on Commodore 64.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



THE RINGS OF THE EMPIRE
(Atari only)

A graphics adventure!

The Empire has developed a series of robot-controlled battle stations. These weapons of destruction are called the RINGS because each station is protected by one or more rings of energy. They have been placed throughout the galaxy to monitor and destroy all unauthorized movement. If they are not destroyed soon, they will put an end to the Rebellion.

In your Y-wing fighter, armed with ZYDON TORPEDOES, you will attack these stations starting with the prototype station, PRYTOS RING, in quadrant IX. If you succeed, you will automatically be transported to the 2X quadrant to attack the newer BYCROTE RINGS station. This station is protected by two concentric counter-rotating rings. The ultimate test will be the MYNOS RINGS stations in quadrants 8X and beyond. They are equipped not only with the RINGS, but also with LASER MINES. All of the stations are equipped with the energy stealing NEGI LASERS. The rings are such that when a segment is blown out, a SEGFIRE MISSILE is launched which tries to destroy the source of the disruption.

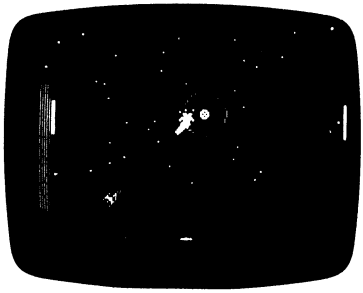
Your primary defense against the NEGI LASERS is to keep moving since the droids controlling the lasers are somewhat slow. The SEGFIRE MISSILES are a different story, you can dodge them or you can try to destroy them with one of your ZYDON TORPEDOES. Since the torpedoes are of a different energy phase, this does not always work. Once the SEGFIRE MISSILES build up enough energy, usually after 6-10 ring segments are blown out, they will be able to pursue you. Your only hope then is probably the WARP WINDOWS at both sides of the quadrant.

MAY THE FORCE BE WITH YOU!

Requires 16K and one joystick.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



BLACK HOLE
(Apple only)

BLACK HOLE is a visual simulation of the problems associated with closely observing a small black hole. The object of the simulation is to enter a defined close orbit about a black hole, maintain it for a given length of time, and then exit. Of course, if you use too much fuel in achieving the orbit, you may not be able to later break free.

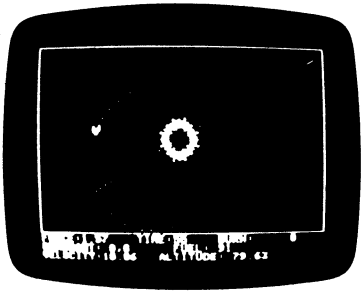
The black hole acts as a point source of gravity. Your probe is outfitted with a main thruster and may be rotated to direct the force. The path taken by the probe is displayed so that you may better understand the interplay between the thrust and its direction, and the subsequent change in trajectory.

BLACK HOLE is not only entertaining and challenging, but is also educational. Notice how the probes speed slows towards the apogee. Is angular momentum conserved under free fall? See Kepler's and Newton's laws in action!

Runs in 16K.

Price: $15.95 Cassette
$19.95 Diskette

Sample display:



SPACE TRAP
(Atari only)

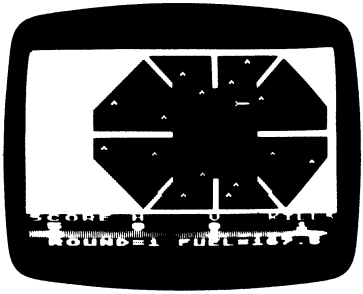
Your mission, Captain,
If you decide to accept it,
Is to destroy all possible Antharian spacecraft,
Before the Black Hole closes,
Trapping you forever!!

Long range sensors show a fleet of Antharian spacecraft entering the Terran Galaxy from the other side of the universe through a recently opened Black Hole. To save the galaxy, it is your mission to enter the Black Hole and delay the attacking forces long enough to allow the Black Hole to close, trapping all those inside forever!! Once you enter the Black Hole, there is no turning back.

The object of SPACE TRAP is to destroy as many enemy spacecraft as possible. As the rounds progress, the walls of the Black Hole close in around you making it more difficult to do battle. The round ends when all the fuel has been exhausted or 14 alien ships have been destroyed.

Requires 16K and one joystick. Price: $14.95 Cassette
$18.95 Diskette

Sample display:



INTRUDER ALERT!

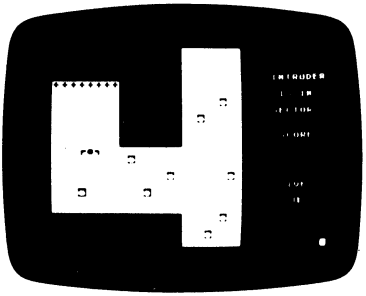
(Atari only)

You are in the middle of the "Dreadstar", having just obtained its secret plans. You must escape to your ship with those plans in order to save the Federation. INTRUDER ALERT is a fast-paced, real-time action game. You control your motion through the various passageways of the Dreadstar with the joystick which is also used to fire your blaster. All along the path to safety you are confronted by Droids who shoot at you as you come into range. Five levels of difficulty are provided in this game, ranging from Sand Scout to Centurian Master.

Requires 16K.

Price: $15.95 Cassette
$19.95 Diskette

Sample display:



MOONPROBE

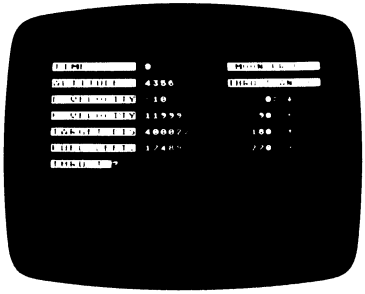
(available for all computers)

Navigate your Lunar Lander to a precise (and hopefully safe) landing on the surface of the moon. This program starts you out in a stable orbit above the moon's surface. By varying the Lander's attitude and amount of thrust you direct the probe to slowly drop from orbit. You must land at the predetermined probe site. To do so accurately and without running out of fuel is quite a challenge!

Requires 16K.

Price: 12.95 Cassette
Price: $12.95 Cassette
$16.95 Diskette

Sample display (Atari):



GAMES PACK I and GAMES PACK II

(available for all computers)

Each of these two software packages contains an interesting cross-section of traditional computer games. The packages are conveniently set up as one large program. This allows you to return to the control program after completing one game and immediately run another game without having to reload. This feature is very useful for cassette users.

GAMES PACK I includes simple physical models, such as CATAPULT and LUNAR LANDER; an excellent mathematical brain teaser, SWITCH; and entertaining gambling games: BLACKJACK, HORSE RACE, CRAPS, and SLOT MACHINE. Manual: 11 pages.

GAMES PACK II contains the popular word puzzle of JOTTO; two entertaining card games: ACEYDEUCEY and CRAZY EIGHTS; the fascinating game of LIFE plus WUMPUS, NUMBER GUESS, and CALENDAR. Manual: 7 pages.

GAMES PACKS I and II require 16K of program memory. (the Atari versions require 24K).

Price: $14.95 Each Cassette
$18.95 Each Diskette
$21.45 Each CP/M Disk

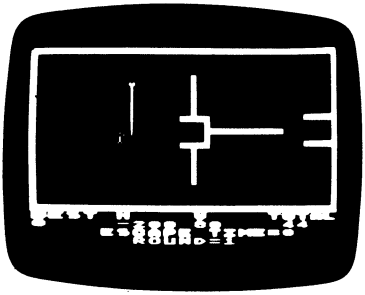
Sample displays (Atari versions):

ESCAPE FROM VOLANTIUM
(Atari only)

You are trapped on an alien world from which you must escape by destroying your guard and maneuvering your ship through a maze. When the sentry is destroyed, a door which leads to freedom opens for a short time, after which another sentry appears to close the door and block your escape. You may re-open the door by destroying the new sentry, but since time is of the essence, you will pay dearly if you have to fight multiple sentries. You will require skill and nerve as you learn to avoid the obstacles to your escape that Volantium has prepared for you. To escape this alien world, you must navigate through ten mazes in succession. Nine levels of play are available, each with increasing complexity of mazes. Your score is displayed as the number of seconds required to make your escape. GOOD LUCK!

Requires 16K and a joystick.

Price: $15.95 Cassette
$19.95 Diskette



SPACE TILT
(Apple and Atari only)

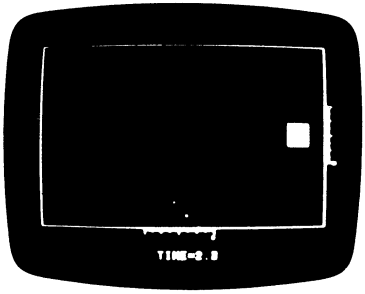
SPACE TILT is a test of both skill and patience as you use your game paddles to roll a "ball" through a "hole" in your TV screen. This program uses HiRes graphics to represent a plane with a randomly placed hole in it. The game paddles "tilt" the plane around the X and Y axes. The ball then rolls according to the plane's orientation. The game appears simple: roll the ball into the hole. Except . . . each time you succeed in this task, the hole is replaced with an even smaller hole!

SPACE TILT can be played with any number of people. A clock is constantly displayed ticking off the seconds to determine who can complete the task in the shortest time.

Requires 16K for the Apple version, 24K for the Atari.

Price: $14.95 Cassette
$18.95 Diskette

Sample display (Atari):



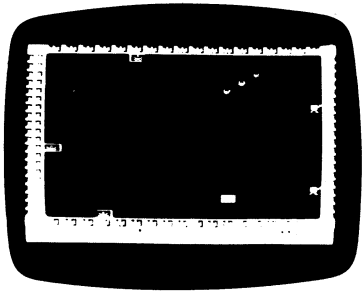
LI'L MEN FROM MARS
(Atari only)

This is a fast paced, real time animated arcade game which takes full advantage of the Atari's graphics power. You are stranded on Mars and must hold out against the marauding Martian Army until help arrives. You will need fast reflexes and a sharp eye to survive in this hostile environment for long. This game is for one player against the computer and requires a single joystick for play. A great way to have fun and to show off some of the features of your Atari!

Requires 24K.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



LUNAR VOYAGER
(TRS-80 only)

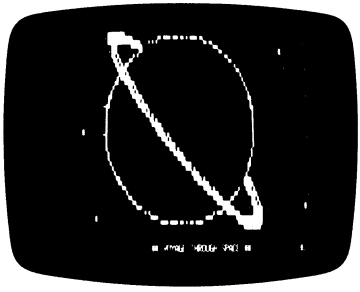
LUNAR VOYAGER is the classic lunar lander graphics simulation, but with new twists and extensions. The moonscope onto which you must land is of your choice; you draw it! You can make the landing site easily accessible, or frustratingly difficult to approach.

Landing on the moon successfully is only part of the challenge. You must then return to the landing bay of the command module for docking. **Then** you must return to Earth and successfully re-enter the atmosphere and land at Houston. Quite a challenge!

Requires 16K.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



LEM LANDER

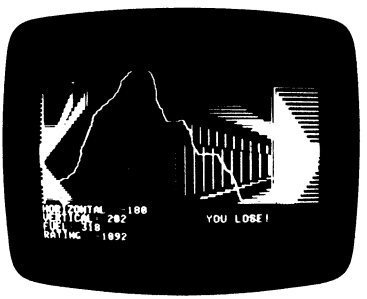
(Apple diskette and TRS-80 only)

LEM LANDER is a HI-RES graphics real time simulation of lunar excursion module maneuvering. You have a choice of several interesting terrains on which to land (Apple version). These terrains are saved on disk as data files. The amount of thrust is controlled by the paddle knob, and the direction by the paddle button. TRS-80 version available on cassette only.

Requires 32K.

Price: $12.95 Cassette
$16.95 Diskette

Sample display:



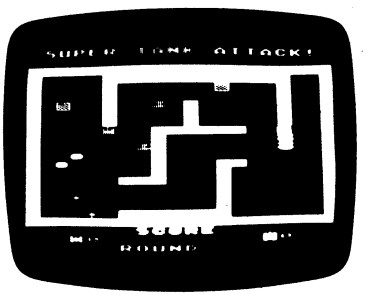
SUPER TANK ATTACK!

(Atari only)

SUPER TANK ATTACK! is a much improved version of the popular arcade game, TANK ATTACK™. The object is to win more battles than your opponent by destroying his tanks. Tanks are moved with the joystick. Each player may choose to control one to three tanks at a time (a good feature when novices want to play against more seasoned players). There is also a "capture the flag" option which adds a defensive element to the strategy. Obstacles include blocks, boulders and trees which can be blown out of the way, and land mines which are fatal. These obstacles are imbedded in a maze of corridors which you must move and shoot through. All of this changes from battle to battle. The graphics and sound are of arcade quality, as is the excitement. Requires two joysticks and 24K (cassette), 32K (diskette).

Price: $17.95 Cassette
$21.95 Diskette

Sample display:



STARSHIP DOGFIGHT

(TRS-80 only)

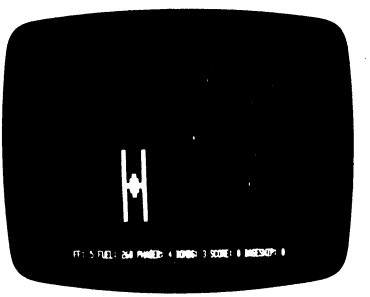
In this world of Atari graphics, it is not too often that we get a chance to offer a high quality TRS-80 graphics program, written in machine language, and containing sound effects. STARSHIP DOGFIGHT has all of this and more.

The game scenario is exciting. You are pitted against a mobile enemy who has both fast fighters and powerful starships. You are moving, they are moving. While you have the enemy in your crosshairs, they shoot at you. You make your shot and quickly veer off. You watch as your phaser blast closes on the shifting target, and hope you avoid their blast. And it ... STARSHIP DOGFIGHT moves quickly (it is in machine language and there are five levels of play). You can control your craft through either joysticks (made by several companies), a numeric keypad, or the arrow keys. Sound is through the auxilliary jack of your tape recorder.

Requires 16K (Cassette), 32K (Diskette).

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



FINAL ASSEMBLY

(Atari only)

FINAL ASSEMBLY is a challenging game requiring quick reflexes and a steady hand. You are the operator of a remote control assembly tool in a rocket manufacturing plant. Your job is to complete the assembly of rockets by adding their final parts – the nuclear fuel cells. As each rocket moves along the assembly line, you must pick up the nuclear fuel cells with your joystick and place them on their installation slots. As you successfully assemble the rockets, the assembly line gets faster and the installation slots get closer together. Soon, you are working at a frenzied pace to keep up with the assembly line. At the same time, you must watch for bonus pay opportunities that occur on the screen. The excitement is heightened because you know that should you ever allow the nuclear fuel cells to touch each other, the whole factory will blow up! Requires 16K (cassette), 32K (diskette) and one joystick.

Price: $15.95 Cassette
$19.95 Diskette

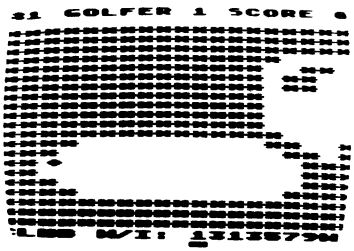
GOLF PRO
(Atari only)

Both realism and excitement are joined in GOLF PRO to produce the best golf simulation available. To really appreciate this game, you should have a color TV so that you can see the green of the fairway, the blue of the water hazards, and the white sand of the traps. You tee off with a wood, use your wedge in the sand trap, and putt on the green just as would be done on the course. Show off the Atari to your friends with GOLF PRO.

Requires 16K and one joystick.

Price: $17.95 Cassette
$21.95 Diskette

Sample Display:

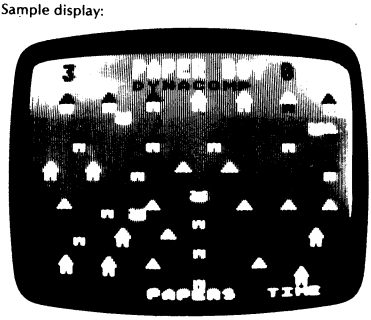


PAPER BOY
(Atari only)

PAPER BOY is a fast-action, arcade-type game for one player. Using the joystick, the player maneuvers his "paper boy" trying to deliver papers to all of the houses on the block. The big problem is that there are four dogs (rabid) which chase you and try to kill you! The paper boy can throw a paper at them to "stun" them; but, if you run out of papers and connot deliver to every house on the block, you are kicked off the route and the game ends. Aside from all this, you have to keep in mind the time limit. If you successfully deliver to all of the houses on one block, you will face another block with more vicious dogs and a stiffer time limit. Requires 24K (Cassette), 32K (Cassette), 32K (Diskette) and one joystick.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:

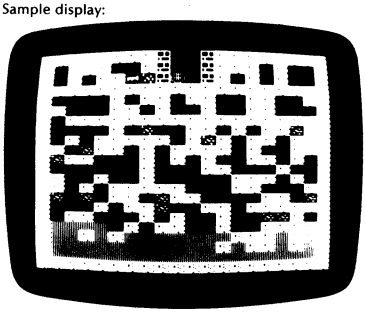


DIAMOND HUNTER
(Atari Only)

Here is an arcade game aimed at the younger children (ages 4 to 10). The goal is to gather diamonds from a maze of caves. You may move Prospector Pete within a given cave maze using the joystick. If you find a key, you may use it to open the door to the next higher (in elevation) cave maze. Dirt may block your way, but dynamite is available. There is also a bear running around in the cave. In addition, water is leaking into the cave system and it is filling up (you will want to find that key so you can go higher!). DIAMOND HUNTER has enough complications to keep the game exciting, but not so much that it is frustrating.

Price: $12.95 Cassette
$16.95 Diskette

Sample display:



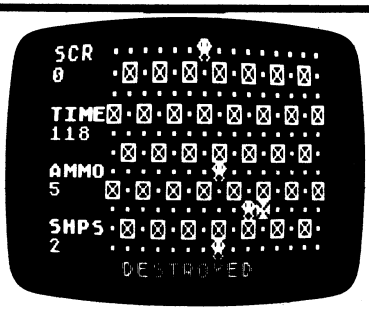
COSMOS
(Atari only)

The object of COSMOS is to maneuver your ship with the joystick to collect all of the power cells scattered throughout the maze-like playing field. This may sound easy, but there are four aliens chasing you. If they catch you, the results are . . .

You do have a weapon to use against the aliens, however. Your ship is armed with a "stun gun" which will temporarily take care of any enemy in your path. Be warned, however, that amunition is scarce!

A good game for the younger set, ages 4 through 9.

Requires 24K (cassette), 32K (diskette), and one joystick.



Sample display:

Price: $12.95 Cassette
$16.95 Diskette

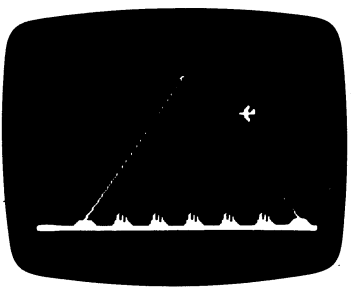
ALVIN
(Atari Only)

ALVIN is a great arcade game. You are commanding a highly maneuverable ship seeking to destroy several enemy cities. You are attempting to bomb these cities while at the same time trying to avoid their defensive fire (MISSILE COMMAND™ in reverse?). Also, your radar has been damaged so that you can only see downwards. This would normally not be much of a problem except that you also have to contend with high-flying enemy aircraft. As long as you are above these aircraft you have the advantage and are safe. However, high level bombing takes considerable skill. Therefore to achieve your goal the best strategy is to swoop down for a bombing run while the enemy craft is out of range, and quickly retreat to the skies. A fun game.

Requires 16K.

Price: $17.95 Cassette
$21.95 Diskette

Sample display:

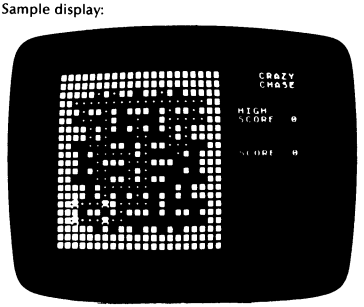


CRAZY CHASE
(Atari only)

CRAZY CHASE is a high pressure arcade game which fully utilizes the graphics capabilities of the Atari. In some ways CRAZY CHASE resembles PAC MAN™ both visually and in play. However, it is also quite different. In CRAZY CHASE you are an alien visitor to a world of monsters. To escape you must collect crystals which are lying about in a maze. These crystals are dropped by the monsters as they run through the maze. However, while you are chasing after crystals, the monsters are chasing after you! A real dilemma. To compound things, the high gravity of this alien planet has slowed you down. Can you stand the frustration and excitement?

Price: $17.95 Cassette
$21.95 Diskette

Sample display:



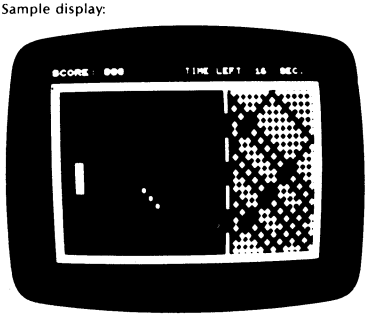
BREAKUP
(40 column PET/CBM only)

The game scenario for BREAKUP is the following. You fire the ball toward the lower left or upper right hand corner of the front wall. Where it hits this wall depends on where you chose to fire the ball from. The ball bounces around the enclosure until it reaches the window. If it passes through the window opening it proceeds to knock down pins and continues to bounce. Otherwise it stops and you can fire another ball. Simple, but exciting.

Does not run on Commodore 64.

Price: $12.95 Cassette
$16.95 Diskette

Sample display:



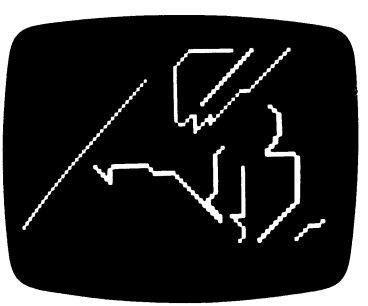
TRIPLE BLOCKADE
(Atari only)

TRIPLE BLOCKADE is an action game in which two or three players draw lines with their joysticks, attempting to block their opponents' lines while remaining unblocked themselves. Points are awarded for every block drawn. A 100 point bonus is given for each unblocked survivor. Each line is drawn in a different color, and sounds accompany the motion of each. Although the game is simple, it is good entertainment, especially for children.

Requires 16K.

Price: $14.95 Cassette
$18.95 Diskette

Sample display:

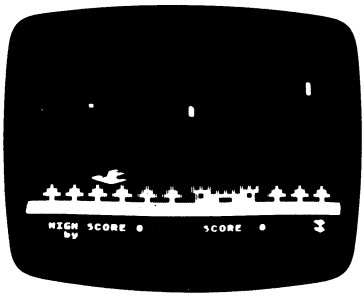


DRAGONBLAST
(Atari only)

Here is the story. You are the magician Merlin and have under your control a large fire-breathing dragon. It is a good thing that you have this dragon because exploding worms are being dropped around and on top of your castle. The job of your dragon is to fly up and burn these worms before they hit and leave bomb holes in your kingdom. However, there are lots of worms falling, and incidentally, "killer komets" whipping through the sky; dragons do not do well when hit by "killer komets". All in all, the graphics are very cute and the excitement is high. Requires 32K (cassette), 48K (diskette) and one joystick.

Price: $17.95 Cassette
$21.95 Diskette

Sample display:



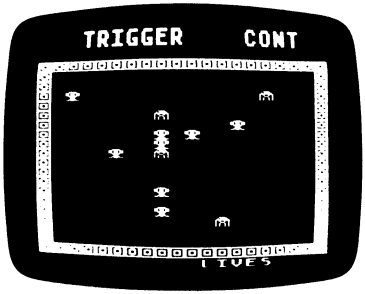
NEBS
(Atari only)

If you like to shoot creepy-crawly things, you will love NEBS. NEBS is a high resolution arcade game in which the goal is to destroy the attacking waves of ugly NEBS creatures. Each of the creatures has a different point value, and each has the ability to chase you about the screen. The more NEBS you shoot, the faster and smarter become the remaining attackers. As you get better, the wave of creatures become more effective in their attacks.

Requires one joystick and 32K (cassette), 48K (diskette).

Price: $15.95 Cassette
$19.95 Diskette

Sample display:

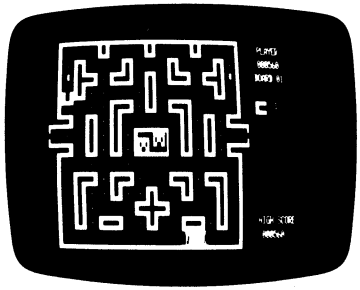


TRASH MAN
(TRS-80 only)

At last! The arcade comes to the TRS-80! Despite the limited graphics capability of the TRS-80, the arcade qualities of this game are very impressive. The objectives and play in TRASH MAN are related to the ideas involved in PAC MAN and JAW BREAKER. The arrow keys are used to direct the motion of your player. As your man moves and consumes objects, the score climbs. However — beware of ghouls! Not available for the Model III or IV.

Price: $19.95 Cassette
$23.95 Diskette

Sample display:



SPACE PIRATES AND SPACE ATTACKERS
(TRS-80 only)

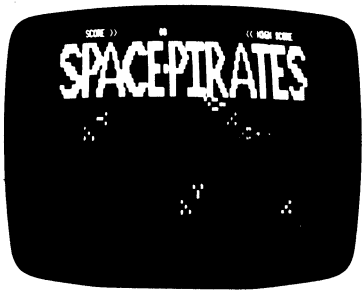
These are two action games which use the graphics capabilities of the TRS-80 to their fullest. In each case the arrow keys are employed to quickly direct the motions of your man.

In SPACE PIRATES you must shoot the invading pirates. You move and rotate your ship and fire at the invading ships. In SPACE ATTACKERS your cannon moves left and right to shoot up at rows of alien attackers which are descending upon you.

Both games contain scoring similar to that found in those quarter-gobbling arcade games. Each game sold separately. Each requires 16K.

Price: $12.95 Cassette
$16.95 Diskette

Sample display (SPACE PIRATES):



BOA
(Apple only)

Simply put, BOA has excellent graphics and sound, as well as an exciting game format. it has received very favorable reviews in *InCider* (8/83) and *Softalk* (6/83).

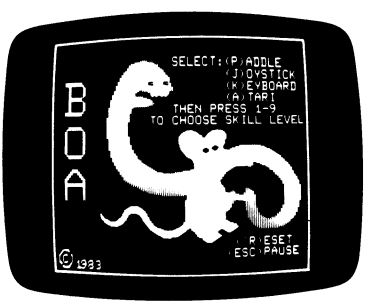
The objective is to eat all of the white mice and rats at each level of the caves in order to reach and completely encircle the jewel at the highest level of the caves. At the same time, the white mice and rats try to keep you from reaching the jewel by attacking, and eating, Boa's tail.

The white mice can eat the magic cheese in the center of the caves and turn into white rats. The rats are more vicious than the mice. At each, more complicated level of the maze, the number of mice and rats increases. This means that Boa must be faster and more efficient at each level to survive until he reaches the highest level of the caves. Rats are very nutritious and each time Boa eats one, he grows a new segment to his tail. There is also an enchanted frog, but we will let you find out about that yourself!

Requires 48K. Paddle/joystick recommended, but not necessary.

Price: $29.95 Diskette

Sample display (Apple):



PICNIC
(PET only)

You are going on a picnic to a private little beach just as you always wished. You can now lie around and eat without anything bothering you, right? — Wrong! There are ants out there which want some of your food. However, they are not as bad as the crabs who want to eat it all! Get busy and stomp on those little fiends before they get everything!

Requires 16K. Does not run on Commodore 64.

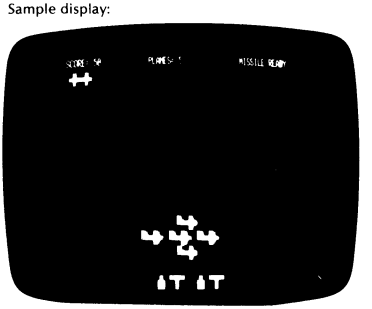
Price: $12.95 Cassette
$16.95 Diskette

AIR DEFENSE
(TRS-80 only)

A full scale nuclear war has begun and nuclear bombers are on their way. You are the sole defender of four cities which are being attacked from two directions. Your defense consists of fighter planes having air-to-air missiles. The enemy bombers are escorted by similar fighters. AIR DEFENSE uses TRS-80 action graphics to their limit (it is quite exciting at the higher play levels) and contains sound. Direction control is through the arrow keys, numeric key pad or joystick (if you have the latter two). Runs in 16K (machine language).

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



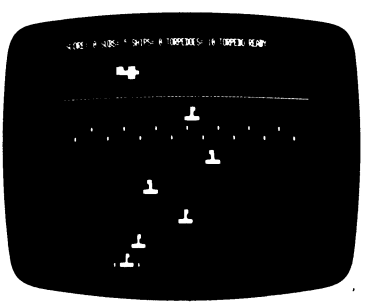
SUBMARINE BLOCKADE
(TRS-80 only)

As commander of an elite submarine force, you have the crucial job of preventing enemy ships from making it across the ocean with supplies for their troops. You accomplish this by bringing your sub to the surface and torpedoing (or ramming!) their ships. However, the enemy has formidable defenses. There are several enemy submarines patrolling the area. There are mines. There is an airborne subchaser.

SUBMARINE BLOCKADE makes very good use of the TRS-80 graphics. It is an action *and* sound arcade game. Runs in 16K (machine language).

Price: $14.95 Cassette
$18.95 Diskette

Sample display:



THE DYNACOMP BOOK COLLECTION

DYNACOMP distributes books printed by two well known publishers: McGraw-Hill and SYBEX. Both companies have a reputation for producing professional quality material on a variety of subjects, including computers.

McGRAW-HILL

In the case of McGraw-Hill, we have selected two texts which are *filled* with scientific software. They each have received great reviews (see the REVIEW section), and were written by a member of DYNACOMP's technical staff. DYNACOMP also distributes the associated software on cassette, diskette and disk.

SYBEX

With regard to SYBEX, we have made arrangements to distribute the *entire* line of SYBEX books. This decision was made after DYNACOMP's president personally reviewed several SYBEX books authored by Rodney Zaks. The technical staff looked at the rest and negotiations between DYNACOMP and SYBEX ensued. The result is that DYNACOMP is now a *distributor* for SYBEX and as such can offer volume discounts to both dealers and individuals (mix and match).

DISCOUNTS

If you purchase 3 to 4 SYBEX books, you qualify for a 10% discount. At the 5 plus level, deduct 20%. Also, DYNACOMP's software dealer discount schedule applies to SYBEX books. Note, however, books and software are discounted separately.

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McGRAW-HILL BOOKS

BASIC SCIENTIFIC SUBROUTINES, VOLUME I by Dr. F.R. Ruckdeschel

See the REVIEW section for a description.
316 pages, hard cover. Price: $19.95

BASIC SCIENTIFIC SUBROUTINES, VOLUME II by Dr. F.R. Ruckdeschel

See the REVIEW section for a description.
790 pages, hard cover. Price: $23.95

NOTE: Both Volume I and Volume II are available in Japanese.

THE COMMODORE 64 BASIC HANDBOOK by Douglas Hergert

Need to check or clarify a BASIC keyword or function? Do it quickly, without rereading the programming manual. This dictionary-style handbook provides clear descriptions and examples of each word in the Commodore 64 BASIC vocabulary. The proper syntax of every keyword and function is explained carefully and thoroughly in easy-to-understand English. Short sample programs illustrate the correct use of each command, and special notes provide insight into subtleties and extra features of the Commodore 64 BASIC vocabulary. This is the indispensable computerside companion for programming your Commodore 64! Available Jan. '84.

170 pp., illustrated. Price: $9.95

THE VIC 20 CONNECTION by James W. Coffron

Learn the simple techniques for putting your VIC 20 computer to work controlling external devices. Design a computer-controlled burglar alarm system, control lights, electricity, and other non-computer devices in your home or office. Input/output techniques for connecting your VIC 20 to peripherals, and analog-to-digital and digital-to-analog conversion are explained in simple, non-technical terms. This gentle guide opens the door to one of the most exciting facets of computer applications. Available Jan. '84.

260 pp., illustrated. Price: $7.95

YOUR FIRST VIC 20 PROGRAM by Rodney Zaks

Write your first BASIC program, *in one hour!* At last, a "how-to-program book" for the first-time computer user, aged 8 to 88. Colorful illustrations and simple diagrams make this book both easy and entertaining to use. In just a few hours you'll know enough BASIC to write complete useful programs on your VIC 20. In no time at all you will be writing your *second* program! See how simple it is to program your computer to do exactly what you want it to do! Available Jan. '84.

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THE ABC'S OF THE IBM PC by Joan Lasselle and Carol Ramsay

Make sure the first few weeks of IBM PC ownership are a breeze. Learn to use every feature of the powerful IBM Personal Computer - the easy way. Easy to follow, step-by-step instructions guide you through assembling the system components, and performing the first of many useful operations. You will learn how to read the directory, erase, rename, and copy files, check the status of files, check the size of a file, and set the date and time on your computer. Understand how to use every feature of you IBM PC and get an edge in business, home finance, and education. Available Jan. '84.

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Learn the true style and subtleties of Apple BASIC through actual practice. Graduated exercises in math, business, operations research, games, and statistics teach you how to program in BASIC. Each exercise contains a statement and analysis of the problem, a solution with flowchart, and a program with a detailed explanation of the subtleties of Apple BASIC. Available Jan. '84.

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THE EASY GUIDE TO YOUR ATARI 400/800 by Joseph Kascmer

Get started on the right foot with your ATARI computer. This jargon-free companion tells you how to do it. Each practical operation that you can perform with your ATARI - word processing, mathematical calculations, budgeting, filing and more - is explained here in simple terms. This friendly guide explains how to use commercially available software with your computer so you can get started right away. Learn the basics of programming to see how you can meet specific application needs with the power your ATARI has to offer. Never before has getting started with your computer been so easy! Available Jan. '84.

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BASIC EXERCISES FOR THE ATARI by J.P. Lamoitier

Learn the true style and subtleties of ATARI BASIC through actual practice. Graduated exercises in math, business, operations research, games, and statistics teach you how to program in BASIC. Each exercise contains a statement and analysis of the problem, a solution with flowchart, and a program with a detailed explanation of the subtleties of ATARI BASIC.

251 pp., illustrated. Price: $12.95

YOUR FIRST ATARI PROGRAM by Rodney Zaks

Write your first BASIC program, *in one hour!* At last, a "how-to-program book" for the first-time computer user, aged 8 to 88. Colorful illustrations and simple diagrams make this book both easy and entertaining to use. In just a few hours you'll know enough BASIC to write complete useful programs on your ATARI. In no time at all you will be writing your *second* program! See how simple it is to program your computer to do exactly what you want it to do!

150 pp., illustrated in color throughout.
Price: $9.95

THE BEST OF IBM PC SOFTWARE by Stanley R. Trost

Get the best available software for your IBM PC. Software experts review commercially available

Continued Next Page

software for word processing, financial and business analysis, scientific applications, and communications. Find out which programs have the features you're looking for, and how they compare to other programs of the same kind. A listing of additional sources of support for each program - publications, books, user groups - is also included. Make sure you get the software you need for your IBM PC. Available Jan. '84.

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APPLE II BASIC PROGRAMS IN MINUTES by Stanley R. Trost

Get the advantages of programming your Apple II without having to learn how to program! This collection of practical BASIC programs allows you to take full advantage of the Apple II functions, instantly. Calculate home finances, analyze business and personal investments, investigate real-estate options, analyze data, and keep records using this set of ready-to-run programs. Just enter the programs into your Apple II and in minutes you will be ready to compute! Let your computer help you make those important decisions, quickly, easily, and accurately.

170 pp., illustrated. Price: $9.95

THE BEST OF CP/M SOFTWARE by Alan R. Miller

Get the best available software for your CP/M system. Software experts review commercially available software for word processing, financial and scientific analysis, language, communications, and business applications. Dictionary programs are evaluated in detail. Find out which programs have the features you're looking for, and how they compare to other programs of the same kind. A listing of additional support material - publications, books, user groups - for each program is also included. Make sure you get just what you need for your computer. Available Jan. '84.

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THE CP/M HANDBOOK by Rodnay Zaks

This beginner's guide contains step-by-step descriptions of all the CP/M commands and features. It shows you start-up procedures, detailed explanations of the file transfer program (PIP), the debugging program and CP/M's text editing program (ED). Appendices summarize commands, parameters, error messages, and conversion tables.

"If your future in computing goes beyond playing games – you'd better have a copy of this book on your shelf." – 80 Microcomputing

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GETTING RESULTS WITH WORD PROCESSING by Martin Dean and William E. Harding

This book's unique task-oriented approach shows you how to use SELECT for all of your word processing needs. SELECT makes it easy to use your computer to write business letters, use repeated blocks, proofread, create form letters, print business contracts, reports, and proposals, prepare legal briefs, and more. Available Jan.'84.

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TIMEX/SINCLAIR 1000 BASIC PROGRAMS IN MINUTES by Stanley R. Trost

Get the advantages of programming your Timex/Sinclair 1000, without having to learn how to program! This collection of practical BASIC programs allows you to take full advantage of the Timex/Sinclair 1000 functions, instantly. Calculate home finances, analyze business and personal investments, investigate real-estate options, analyze data, and keep records using this set of ready-to-run programs. Just enter the programs into your T/S 1000 (16K required), and in minutes you will be ready to compute! Let your computer help you make those important decisions, quickly, easily, and accurately.

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INTRODUCTION TO WORD PROCESSING by Hal Glatzer

Finally understand what word processing is all about. You will learn, in non-technical terms, what a word processor can do and how it achieves these feats. Concepts common to all word processing systems are explained and features are analyzed in detail, from screens to scrolling and formatting. Know what to look for when purchasing hardware and software, and why. Finally, a cost/benefit analysis for all features is presented. Discover how a word processing system can make your life easier, and why word processing is one of the most commonly used computer applications today!

"...it takes a tough, contemporary subject...and renders it comprehensible." – TypeWorld

205 pp., 140 illustrations. Price: $12.95

PRACTICAL WORDSTAR USES by Julie Anne Arca

Master WordStar and solve all of your word processing problems with ease and efficiency! First get an overview of what this powerful program can do for you. Go on to learn, in a simple, step-by-step manner, how to streamline office productivity. This task-oriented user's guide uses realistic examples to illustrate boilerplate paragraphs, creating form letters with repetitive vocabulary, using a 2-column format to create newsletters, the use of indents in a detailed outline, and other exciting and useful formats available with WordStar. *Includes free WordStar Command Reference Poster.* Available Jan. '84.

200 pp., illustrated. Price: $13.95

YOUR FIRST COMPUTER by Rodnay Zaks

One of our best sellers, this is an easy-to-understand, beginner's guide to small computers. Over 250 pages of practical information on the basics of small computers: understanding them, buying them, and using them for personal and business applications. It includes selection criteria for computers, peripherals, languages, and application packages. After reading this book you will understand what all of the fuss is about!

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258 pp., 150 illustrations. Price: $8.95

INTRODUCTION TO WORDSTAR

(Second Revised Edition)

by Arthur Naiman

Get off to a smooth start with WordStar. You will quickly understand and use each feature of this powerful word processing program for all of your office tasks: edit copy, move and delete blocks of text, check copy for spelling accuracy, create and merge files, format on-screen, even design special print effects. A convenient and complete dictionary of all the WordStar, SpellStar, and MailMerge commands make this book convenient and easy to use. Plus a special feature...it's illustrated: every entry includes a diagram of the keys used to perform the command. This indispensable, fingertip guide is highly recommended for beginners as well as experienced users. *The newly revised Second Edition shows you how to use WordStar on the IBM PC.*

"...an indispensable fingertip guide..." – PC Magazine

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THE FOOLPROOF GUIDE TO SCRIPSIT WORD PROCESSING by Jeff Berner

There are no mysteries to word processing - just a few simple techniques and tricks. The ins and outs of SCRIPSIT, the TRS-80 word processing program, are explained here in witty, conversational style. Through the use of illustrations, sample exercises, and specific instructions you will quickly learn to create and edit documents, manage files, polish manuscripts, prepare form letters with variables, and use your printer. Discover the secrets and enter the welcome world of SCRIPSIT word processing.

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Learn the true style and subtleties of BASIC through actual practice. Graduated exercises in math, business, operations research, games, and statistics teach you how to program in BASIC. Each exercise contains a statement and analysis of the problem, a solution with flowchart, and a program with a detailed explanation of the subtleties of BASIC. Though the programs are designed to run directly on TRS-80's, they will run with minor or no changes on any system using a Microsoft BASIC.

Continued Next Column

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Find out how to use your computer to simplify many routine tasks. Patience and humor guide you through the purchase, set-up, programming, and use of the Radio Shack TRS-80 or TDP Series 100 Color Computer. This is an indispensable introduction to your color computer, complete with cartoons, diagrams, photographs, and a BASIC thesaurus and command reference section. Descriptions of available software and peripherals make this an ideal guide for those who aren't interested in programming, but who want to use their computers right away. Have fun while you learn to use your Color Computer.

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"...one of the best introductory texts to the hardware end of things." Elementary Electronics

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Finally, the entire Pascal vocabulary summarized in one place! This dynamic reference volume puts Pascal at your fingertips. Clear, concise, reliable descriptions of each word and symbol and short sample programs, illustrate the elements of the language. The subtle variations introduced by different commercial versions of Pascal are also discussed in this easy-to-use handbook. For smooth programming, have this book next to your computer!

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"The INTERNATIONAL MICROCOMPUTER DICTIONARY is...well done and easy to use." Personal Computer World

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DON'T (Or How to Care For Your Computer) by Rodnay Zaks

Keep your computer and peripherals operating reliably! This is an easy, entertaining guide to computer and peripheral preservation. Specific advice is presented about the care and maintenance of your computer, floppy disks, hard disks, the CRT terminal, the printer, tape units, the computer room, software, security, and documentation. Knowing the dos and don'ts of computer use will prevent unnecessary downtime and ensure a longer-lasting life for your system and peripherals.

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Learn how to put BASIC to work to automate frequent business tasks. Each function in the powerful BASIC programming language is described in this business-oriented guide to programming. You will quickly learn to use BASIC to write programs for: sales reports, financial statements, graphs and charts, depreciation calculations, cost/volume/profit analyses, and more. Realistic sample programs explain each element of BASIC, giving you a solid, practical introduction to this programming language. Make your business more efficient by letting your computer do the work for you.

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Find it fast, and all in one place! Whether you're new to programming or simply new to Pascal, this

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book will help you. Pascal features are covered progressively and in detail, from basic definitions to complex data structures. This is the first Pascal book that can be used by people who have never programmed before as well as advanced programmers. The extensive appendix lists all symbols, key words, and rules of syntax, providing a concise summary and reference tool. Find out all there is to know about Pascal, in this one easy-to-use volume!

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Learn how to program one of the most widely-used 16-bit microprocessors in industry today - the 8086! And, at the same time, the 8088 microprocessor will make your IBM PC or other 8088-based system perform like a dream. Start with the basic concepts, and go on to learn the more useful and interesting elements of programming - the internal organization of the 8086/8088, the instruction set, basic programming techniques, input/output, addressing techniques, register management, and program development. Written clearly enough for the inexperienced programmer, yet complete enough for the expert. Available Jan. '84.

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Make your microprocessor perform the way you want it to by applying simple assembly language programming. All aspects of programming the 6502 are clearly explained here - from elementary concepts to advanced data structures and program development. The exercises included help you gain the necessary programming skills for writing useful 6502 programs. A discussion of trade-offs between hardware and software, detailed explanations of each 6502 instruction and the 6502's internal registers and bus operation are just a few of the topics covered. No prior programming knowledge is required.

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Use the 6502 microprocessor for real life applications! Learn how to operate I/O chips, connect devices and develop practical application programs for the 6502. More than 50 exercises, designed to test your skills every step of the way, teach you how to program a PIO, how to generate pulses, measure delays, and control actual input/output devices such as switches, relays and digital-to-analog converters. Design a complete home alarm system, electronic piano, motor speed regulator, industrial temperature control (including A/D conversion), and more. Make your computer system do more for you!

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176 pp., illustrated. Price: $8.95

THE APPLE CONNECTION by James W. Coffron

Those dreamt of computer-controlled home appliances are now possible with your Apple computer. Learn the simple techniques for putting your computer to work controlling external devices. Design a computer-controlled burglar alarm system, and control lights, electricity, and other non-computer devices in your home or office. Input/output techniques for connecting your Apple to peripherals, and analog-to-digital and digital-to-analog conversion are explained in simple, non-technical terms. This gentle guide opens the door to one of the most exciting facets of computer applications.

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"...very well produced...you certainly won't have any trouble following, entering, or using the programs." – Microcomputing

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VisiCalc and other programs. With this book you will be able to create and use VisiCalc spreadsheets for tasks ranging from planning to examining projection scenarios. Perform complex calculations, with ease!

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"...this book is an invaluable aid for any UCSD Pascal user." – Apple Orchard

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Need to check or clarify a BASIC keyword or function? Do it quickly, without rereading most of the programming manual. You will find clear descriptions and examples of each word in the Apple II BASIC's vocabulary in this dictionary-style handbook. The proper syntax of every keyword and function is explained carefully and thoroughly in easy-to-understand English. Short sample programs illustrate the correct use of each command, and special notes provide insight into subtleties and extra features of Applesoft BASIC and integer BASIC. This is the indispensable computerside companion for programming your Apple II! Available Jan. '84.

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This book contains scientific and engineering application programs written in FORTRAN. One semester of calculus is required and some familiarity with FORTRAN or another high-level language is recommended. (See description for *Pascal Programs for Scientists and Engineers.*)

280 pp., 120 illustrations. Price: $16.95

BASIC EXERCISES FOR THE IBM PERSONAL COMPUTER by J.P. Lamoitier

Learn the true style and subtleties of IBM BASIC through actual practice. Graduated exercises in math, business, operations research, games, and statistics teach you how to program in BASIC. Each exercise contains a statement and analysis of the problem, a solution with flowchart, and a program with a detailed explanation of the subtleties of IBM BASIC.

252 pp., illustrated. Price: $13.95

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Instant programs for the IBM Personal Computer! This collection of practical programs allows you to take full advantage of each one of the IBM PC's functions without ever having to create a flowchart or learn a word of BASIC. Calculate home finances, analyze business and personal investments, investigate real-estate options, analyze data, and keep records using this set of ready-to-run programs. Just enter them into your IBM PC, and in minutes you will be ready to compute! Let your computer help you make those important decisions quickly, easily, and accurately.

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You know VisiCalc can perform near-miracles, but how? Here are more than 40 practical business applications from VisiCalc. Applications range from financial statements, to master budgets, to pricing models and investment strategies. Each application is worked through in step-by-step detail, making the VisiCalc electronic spreadsheet as easy to use as a pocket calculator, yet as powerful and versatile as a complete library of business programs. Don't let the power of this program go to waste - see it solve those business problems!

260 pp., illustrated. Price: $11.95

PROGRAMMING THE Z8000
by Richard Mateosian

Reach your application goals with your Z8000 microprocessor! For anyone interested in using the Z8000: beginners, experienced programmers or advanced design engineers, this is a complete introduction to programming concepts and techniques for use with the 16-bit, Z8000 microprocessor. Detailed descriptions of the architecture and functions of this "super chip" are presented and the reader is shown how the Z8000 interacts with its family of support chips. *Programming the Z8000* shows how to write clear, well-organized programs for simple or complex applications.

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by James W. Coffron

Design a useful microprocessor-controlled system with ease! Learn the necessary programming and interfacing techniques to connect the Z80 microprocessor to common microcomputer parts - ROM, static and dynamic RAM - and use basic I/O techniques, as well as advanced ones, such as interrupts. Instructive text, clear, precise diagrams, and thorough examples explain everything you need to know to implement exciting and useful Z80 applications.

288 pp., illustrated. Price: $14.95

CELESTIAL BASIC: ASTRONOMY ON YOUR COMPUTER
by Eric Burgess

You man never get to the moon on the space shuttle, but you can see the heavens with your computer! *Celestial BASIC* presents programs that rapidly complete typical astronomical computations. The programs are written in a

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"...several hundred dollars worth of software for $13.95." - Astronomy

300 pp., 65 illustrations and photos. Price: $13.95

NOTE: DYNACOMP also distributes the software keyed to CELESTIAL BASIC. Available on two Apple diskettes for $49.95.

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Use the powerful and versatile C language to solve your programming problems! You will learn to use the C programming language through this book's careful guidance. First, the basic elements are clearly explained, then through a series of short descriptive programs you will gain increasingly useful programming skills. Sample programs illustrate the use of C in real-world applications. Different C library functions and C compilers are discussed. Learn how to use C with CP/M, the Unix system and Unix emulators, and get the true power that this unique language has to offer. Available Jan. '84.

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YOU GUESSED IT! DYNACOMP has become a distributor for Banbury Books. This occurred in a very simple way. Banbury sent a book/diskette combination for us to review. It was great, particularly since the software tied in with the book so well. We then looked at the rest of their selections (some were only in the pre-print form) and decided to carry the line.

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THE IBM/PC & BUSINESS SOFTWARE by James E. Kelley Jr.

The IBM PC microcomputer is the world's most successful business machine. And now, for the first time, the software that makes it run is thoroughly and conversationally explained so that anyone can get the most from this remarkable computer.

A superbly crafted, clear, understandable text, BUSINESS SOFTWARE breaks new ground in computer publishing. It comes complete with two floppy disks filled with sample data, over 40 programs, and a wealth of interactive, hands-on material. The book describes and the software executes a dazzling variety of financial, word processing, and data-base analyses that are essential to the owners of an IBM PC.

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Apple's newest computer, MacIntosh, is a revolutionary machine. Remarkably powerful, reasonably priced and employing many of the $10,000 Lisa computer's design and software developments. MacIntosh is destined to find its way into schools, homes and businesses worldwide.

Continued Next Column

MacIntosh: The Appliance of the Future introduces this revolutionary computer to the novice and experienced alike. The book assumes absolutely no knowledge of computing, nor of the Pascal programming language. Yet it leads the reader through the techniques of managing MacIntosh's operating system and teaches Pascal in a way that makes this beautifully structured language understandable.

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Continued Next Page

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Continued Next Column

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byJerry Willis and William Danley, Jr.

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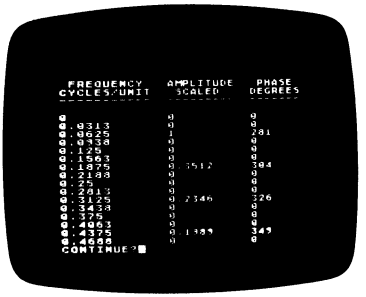

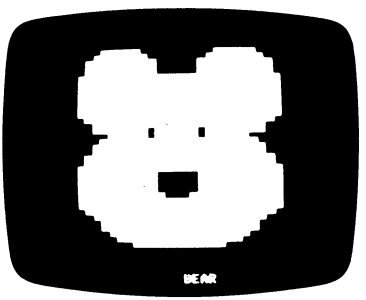

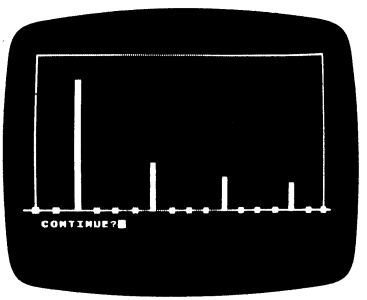

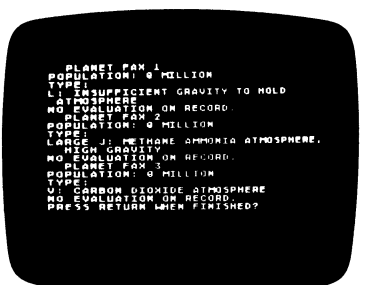

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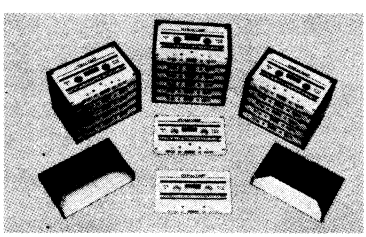

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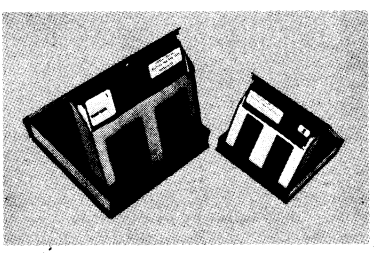

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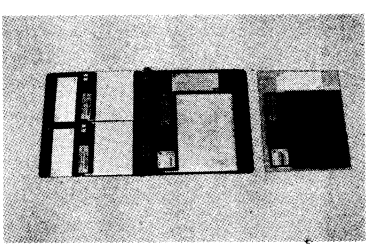

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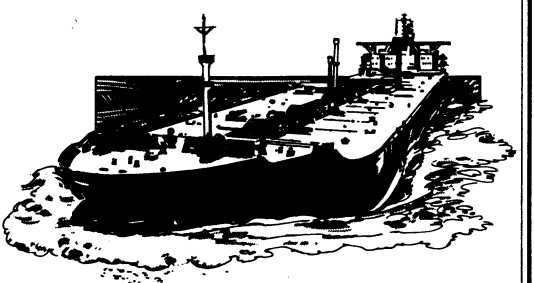
Valdez: A Supertanker Simulation

Mike Kohlrust



creative computing
SOFTWARE PROFILE

Name: Valdez
Type: Supertanker
System: 16K Apple, PET, Northstar, TRS-80, CP/M, 24K Atari
Format: Disk and Cassette
Language: Basic
Summary: Excellent
Price: $19.95 Cass.; $23.95 Disk
Manufacturer:
Dynacomp, Inc.
1427 Monroe Avenue
Rochester, NY 14618

To me, a simulation is valuable, in direct proportion to its ability to mirror the world. In a wider sense, games, such as the fantasies that are widely available, are also simulations, but their primary purpose is as games. I feel that the main purpose of a simulation is to tell or teach me something about the real world. If there is fun to be had in the process, so much the better. Valdez succeeds on both accounts.

The object of Valdez is to navigate a supertanker from the North Pacific approximately 100 km. into the port of Valdez, Alaska. All of the important characteristics of a 300,000 ton supertanker have been accurately programmed into the simulation. In addition, a 64,000 point bit map is included.

All navigation must be done in relation to this map. This sounds easy. After all, all you have to do is tell the tanker when to turn and when to stop, right? Wrong! When I said that all of the characteristics of the tanker had been simulated I meant just that. Turning an object which weighs over 300,000 tons isn't done on a dime; neither is stopping or accelerating it. Momentum is one of the most important factors to be considered in the operation of this type of ship.

Once you have learned to control the ship through helm and engine commands, you must guide it through narrow passes into Valdez harbor. Once again this isn't as easy as it sounds for the computer is sailing other ships downstream from Valdez into the North Pacific. If you manage to dodge all of these ships, and there can be up to a dozen on the screen at any given time, you must then dodge the icebergs generated by the Columbia Glacier.

As if this isn't enough, you must take into account the tides in the area, which are quite strong and varied, and can have strange effects on your course.

Once you have made it into Valdez you must dock with the floating unloading station by bringing the ship to a dead stop with an accuracy of a few meters. As I said, it isn't as easy as it sounds!

The feel of the simulation is one of accuracy and authenticity. Never having piloted a real supertanker, I can't swear to that, but shortly before purchasing this simulation I read "Supership!" by Noel Mosterat, and the problems he discusses in the book all show up in the simulation—including the unreliable power plants!

It is obvious that someone has put a great deal of time and effort into Valdez and that it has paid off. On the whole, the results of interacting with this simulation have been an increased appreciation of the difficulties involved in operating this type of ship and several burned dinners as I have put off turning the hamburgers while trying "just one more round."

All of this isn't to say that the simulation is perfect. After all, no program is. There are several minor problems. The first is that the "play value" of the simulation has been somewhat neglected. For instance, there is no scenario at the beginning to set the scene. In addition the Apple II version that I have makes no use of the strong points of the Apple such as its sound and graphic capabilities. This is common with programs that have been developed for one system and translated into others. Apparently Valdez was developed on a Northstar system and translated to most others.

However, one of the nicest things about this program is that it can easily be modified to achieve the exact feel you want. Moving the opening down a few lines leaves room for a nice scenario and sound is easily added, even by a novice Applesoft programmer like me. Modifying the For/Next loops in lines 149 and 157, for example, can produce any radar effect that you want. My program has been modified to include both sound and variable radar scans, which make the simulation much more enjoyable for me. The only problem is that the wider scans take quite a while to display. I'm surprised that a short machine language program hasn't been incorporated here to speed up the display generation.

All in all Valdez is an excellent simulation and one of the few in this class that is available for all popular computers and on cassette. The best thing I can say about it is that it is exactly what I expected to be able to do when I bought my Apple a few months ago. I hope to see more such programs in the future—especially in cassette form. □

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A photocopy of a review which appeared in INFOWORLD.

InfoWorld

InfoWorld Software Review

Kiri's Hodge-Podge, a children's program for the Apple

By Jay P. Lucas

I found it. And it only costs $23.95 in disk version. If you have young kids, read on.

"But [enter your spouse's name], a computer is educational. Think of the kids, how they'll learn from one, how it will intelligently entertain them and how it will patiently instruct them—in full color, with sound. After all, 'Sesame Street' is only on for one hour a day."

Ah yes, you smile with recognition. Stock argument number 17 for getting a computer through the family budget committee. Suppose all the reasons and pleading win the day, and you purchase the computer.

You set it up, run it through its paces, do some elementary programming and start enjoying your new machine. Time passes too quickly, and suddenly you're facing the budget committee's quarterly review.

Where is the benefit you promised for the kids? You need a kiddie program, and fast. Sorry! Reality dooms you, for good children's programs are, in fact, few and far between.

I've been looking for a good one for more than a year. My kids are now five and two, so I need programs with big, bold, colorful pictures, with familiar tunes and sounds and with the simplest of operating instructions that do not require much, if any, reading. Excitement is essential to hold their attention, and there must be quick, visible and immediate responsiveness to any of the child's efforts to control or communicate.

A recent attempt by a major adventure programming house to address this preschool audience was such a dismal failure that I was able to receive a full refund from the store selling it.

I am happy to report, however, that the subject of this review, Kiri's Hodge-Podge, is everything I've been searching for, and an instant success in the family.

InfoWorld
Software Report Card

Kiri's Hodge-Podge

	Poor	Fair	Good	Excellent
Performance	☐	☐	☐	☑
Documentation	☐	☐	☐	☑
Ease of Use	☐	☐	☐	☑
Error Handling	☐	☐	☐	☑

System Requirements

- Apple II or II Plus
- 48K RAM
- One disk drive or tape

Price: ***$19.95*** cassette, ***$23.95*** diskette

Dynacomp, Inc.
1427 Monroe Street
Rochester, NY 14618

*** SPECIAL OFFER ***
We have reduced the price of our very popular HODGE PODGE to:
$14.95 Cassette
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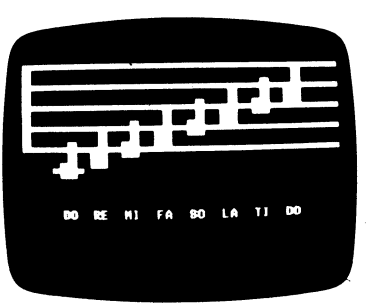

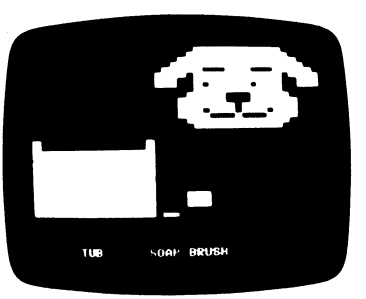

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Features and performance

Kiri's Hodge-Podge is a collection of 50 or so quick little programs, each running in response to the pressing of one of the keys of the Apple's keyboard. Each program is a full-color action vignette, usually with sound, that describes some lesson associated with the key pushed. Most keys tell a complete story in themselves, but some keys are arranged as part of a group.

For example (going across the usual starting finger positions): *A* shows an apple; *S* shows a growing star (going nova?) with others in the background, while "Twinkle, Twinkle Little Star" plays from the speaker; *D* shows a dog animation with the dog about to get a bath and doing a quick disappearing act, all to music; *F* displays Old MacDonald's Farm, plays the familiar song and then displays an animal.

J shows the letter *J* jumping across the screen ending in the spelled-out word *jump*; *K* shows a picture of Kiri's koala bear; *L* shows Mary's lamb and sings the song; and the ;/+ key gives an introduction to addition using sticks and numerals.

The lowercase number keys provide music: each one is a note of the scale; the keyboard is effectively turned into a slow little organ. As each "note" is pushed, a treble clef on the screen displays the note in color and the name of the note is shown at the bottom.

Each small program is planned with care and is executed with attention to the way children behave. My son Zachariah favors the *Z* key, naturally, and may push it many times in a row. Each time the "zigzag" appears in a different place, and each leg is a different color.

Each time the *F* is pushed, Old MacDonald's farm shows a different farm animal. The *X*, which fills the screen with a large X-shaped kaleidoscope pattern, uses different colors each time it is pushed.

When you push the *N* (for "numbers") several times in a row, the number displayed is increased by one, and the incremental addition is illustrated by stacked blocks. The apple moves around the screen as the *A* is pushed time and again.

The drawings are done in low-resolution graphics, but are bold and beautiful. You don't need a color screen, but you lose much of the excitement when you view this program only in black and white. The tunes are about as good as the Apple oscillator can produce, which is not bad.

If you can judge the performance of this type of program by results, then it excels. The kids around the block ask for this program often, almost daily, and while my five-year-old commands the keyboard, my two-year-old watches in fascination. This can go on for half an hour per session, which is a long time for these fellows.

Ease of use

My copy of the program worked flawlessly from the start. I bought the disk version, which is written in DOS 3.2. To make it simpler to use the program in my DOS 3.3 machine, I used MUFFIN (an Apple utility) to make a working copy, as the documentation suggests. Running the program is as easy as 1-2-3: turn on the TV, put in the diskette and turn on the Apple.

The program comes in two languages, both on the disk: Integer BASIC and Applesoft. I have noticed no differences between the versions.

Error handling

The only way the young user can get in trouble is by hitting the escape or the reset buttons, and he should be warned to not touch them or the computer will stop. If he does push them, there is still no big problem—just enter RUN to restart the program. In every other respect, the program handles as you would expect it to.

Documentation

Even though the documentation consists of only a modest mimeographed sheet, it is totally acceptable. The first page gives a general description of the scenes in Kiri's Hodge-Podge and gives suggestions for using the program with both the parent and child, or the child alone.

The rest of the sheet is a description of all of the responses to the keyboard keys and the use of the clear key, Return. The documentation is short, but it says everything worth saying.

Support

I have had no need to contact Dynacomp about service, but I received the original order within four days of phoning it in. The program disk is not copy protected, but Marsha Meredith, the author/programmer, has done such a fine job of writing this program that I would consider it a nasty act to cheat her of her royalty.

Summary

Kiri's Hodge-Podge is written in a dense and sophisticated programming style, using all the features of the Apple. Although it is a professional product, I have the feeling that it was not originally written for money. It's just too "loving" a program. The author has really taken care to fascinate and educate the young user in every way possible.

In doing so, she has, in my opinion, set the standard to which all future preschool children's programs must aspire. ■

The response to DYNACOMP's HODGE PODGE was so great that we decided to add a sequel: CHILDREN'S CARROUSEL (described on page 19). CHILDREN'S CARROUSEL is also aimed at the 3- 7 year old group, and although it is similar in some ways to HODGE PODGE it is also much different.

BOOK REVIEW

Basic Scientific Subroutines
Volume I, Volume II

Review by Bruce Powel Douglass
Dept of Physiology
School of Medicine
USD Medical School
Vermillion, SD 57069

BYTE BOOKS, a division of McGraw-Hill, has introduced a new series by F.R. Ruckdeschel on scientific and engineering methods in Basic for microcomputers. Dr. Ruckdeschel, well-known to BYTE readers, has written many excellent articles on scientific subroutines in Basic. He is currently employed as a scientist at the Dynacomp Corporation, which publishes a large selection of computer software, much of which is scientifically oriented. Incidently, the programs for volumes I and II are available on disk from Dynacomp. That will save someone a lot of typing!

Volume I

The first volume is about 300 pages of numerical analysis techniques and appropriate subroutines, including:

1. plotting subroutines
2. complex variables
3. vector and matrix operations
4. random number generators
5. basic series approximations.

On the whole, the algorithms used are good and the topics are explained satisfactorily for the average user. The few exceptions that I found will be noted shortly. The routines are listed in two dialects of Basic: Northstar and Microsoft, both in annotated and condensed form. This is a helpful feature of the book in that it is easy to read and follow the logic of the routines, but when it is time to type in and save all that precious memory you needn't worry about adjusting line numbers when REM statements and lines are deleted.

The plotting routines are useful if your microcomputer does not already have built-in graphics capabilities. All the plotting routines developed here use byte resolution and plot "*" on the screen or printer.

Complex variables are covered in a whole chapter, but Dr. Ruckdeschel is rather insistent on the conversion of rectilinear complex numbers into polar complex numbers. The reason is obvious; it is easier to perform multiplication, division and more complicated mathematics on complex numbers in their polar format. However, if you are using these routines to solve for all complex roots of a polynomial equation, with order reduction by synthetic division, or some other iterative method that has a large roundoff error component, you should be aware that more roundoff error will be added to your procedure. The reason for this is the constant change from rectilinear to polar, followed by the multiplication or division, followed by the conversion back to rectilinear coordinates. This is especially true of the TRS-80 (my own dear machine) in which the transcendental functions are single precision. You will be limited to single precision on any machine that lacks double precision for its transcendental functions.

The chapter on vector and matrix operations is one of the best in the book. The demonstration programs perform vector additon, subtraction, cross products, dot products, norm and angle (vectors), and matrix addition, subtraction, multiplication, division, inversion, clearing, determinants, eigenvalues, exponentiation, and solving simultaneous equations. While none of these routines is especially difficult for someone who understands the mathematics involved, the time saved in having them all in one place when you need them is worth the price of the book.

A problem with the vector and matrix chapter is the use of cofactor reductions for the calculation of determinants. While this method does indeed work, it is size dependent, and can be a real pain to program. It is my opinion that the use of the Gauss-Jordon eliminaton method to form an upper triangular matrix and then summing the diagonal elements is much superior for numerical computation. This method is easier to program and is not size-dependent. The cofactor reduction method is better in certain instances, such as in matrix operations performed in symbolic manipulation languages, such as LISP, KLISP, or MUSIMP. Since this is a book on Basic subroutines, I think that the upper triangular method ought to be used instead.

In my judgement, linear programming methods might have been introduced here with great effectiveness. The Simplex algorithm lends itself well to matrix computation, but I guess everything can't be included.

I rarely have had a need to generate anything other than white noise and Gaussian distributions, but the chapter on number generators is complete. You have routines to generate; normal, linear, Poisson, binomial, exponential, Fermi, Cauchy, gamma, beta, and Weibull distributions. I wondered why Chi-square and F ratio distributions were not given as well, since those were things that I have actually used. The Chi-square distribution is found in Volume II and the F ratio must be one of those waiting in the wings for Volume III.

The last and best chapter, in my opinion, is on series approximations. Primarily, the only expansions discussed are Taylor series, but some more optimal series expansions are lifted from Hasting's **Approximations for Digital Computers** and Abramowitz and Stegun's **Handbook of Mathematical Functions**. Several series expansions are explicitely given, with their coefficients, error bounds, and radii of convergence. Routines to approximate these functions are given, again, in two dialects of Basic.

The diskettes for Volume I contain menu-driven programs and may be useful. They are a bit expensive as a group, so I recommend buying the book and then choosing the diskette(s) or cassette(s) you need. Disk #1 contains chapters 2 and 3; Disk #2 contains chapter 4; and Disk #3 contains chapters 5 and 6.

Volume II

Volume II is more than twice the size of its companion, storming on the scene with over 700 pages at a price tag of $23.95. Clearly, the mathematics used in Volume I are significantly less complex than those used for Volume II. But this does not diminish the value of either volume.

The chapters in Volume II include:

1. least squares approximations
2. series approximation techiques
3. functional approximations by iteration and recursion
4. CORDIC approximation techniques and alternatives
5. table interpolation, differentiation, and integration
6. finding real roots of functions
7. finding the complex roots of functions
8. optiminzation by steepest descent.

If it sounds to you that Dr. Ruckdeschel is primarily concerned with approximation of things here, you're right! Volume I only scratched the surface of this topic. So if you have ever wanted to approximate a function on a digital computer, this is THE book to get (I might add that EVERY calculation in Basic is an approximation!), although, of course, it is impossible to include approximations for all functions.

The first chapter is on ordinary, garden-variety least squares approximations. This method remains one of the most popular (primarily I think, because people can understand it), although it suffers from inhomogeneous error variance. That is a fancy way of saying that your error varies depending on where you are in your approximation interval. The first chapter on polynomial approximation by least squares is a good place to start, since you can use the fact that the model is linear in the fitting parameters to simplify the whole approximation process.

The chapter builds nicely from one dimensional first order regression (more commonly known as linear regression, or simply regression) up through multidimensional polynomial regression. Section 1.7 of the book clarifies an iterative procedure to minimize the roundoff error that accumulates in the other methods. This culminates in a rousing finale with a powerful routine called PARAFIT, which performs an iterative approximation of the parameters of the arbitrary function. As impressive as PARAFIT is, I think the Marquardt "maximum neighborhood" method is generally superior. Notice that I say "generally", since for any given function a specific method might be better, but in most cases, the Marquardt technique will locate the neighborhood of the root and converge to it faster than other least squares methods.

Chapter 2 deals with series approximations, presenting no less than 15 subroutines for approximations of various functions! Horner's nested-multiplication algorithm is discussed in relationship to Taylor series evaluations, and for an

example, is applied to the summation of Bessel function series approximations. Other examples are the Chi-square distribiution, gamma function, and error function approximation.

- Chebyshev polynomials, techniques for using them, and reversion, inversion or shifting of polynomials are represented in the next sections. The former, reversion of a polynomial is simply given a polynomial Y=P(X), and you are able to generate the reverse polynomial X=Q(Y). Polynomial inversion is finding 1/P(X), and shifting a polynomial is a way of moving the expansion point of a polynomial away from a point of large roundoff error. These routines can be quite useful, and the examples and explanations are understandable.

The next section on rational polynomial approximations is not one you will see in many places. The subject of where these approximations come from is avoided, and justifiably so since generation of the coefficients of rational polynomial approximations seems to involve more magic and incantation than anything else. But methods for the evaluation of these approximations are given.

Eleven example routines are presented for approximations by interation and recursion. You can do such interesting things as generate roots of numbers, get tangent and arctangent values, calculate Lengendre polynomial coefficients, etc. The use of recursion for calculation of elliptical integrals and natural logarithms is explored as well. If you don't know what a CORDIC Algorithm is, you are not alone—neither did I. It is an acronym for modified coordinate rotational digital computer algorithm, based on vector rotations, and offers a fast method for the calculation of trigonometric functions, their inverses, as well as some other functions.

The next chapter on table interpolation, differentiation, and integration algorithms is useful because, while computers have made many standard function tables obsolete, some tables still need to be consulted if accuracy is necessary. But what do you do if the value you need lies between the table entries? You read Chapter 6, of course. Methods shown include the Langrange interpolation, the Newton interpolation and the semi-spline curve-fit (Akima's algorithm for the approximation of cubic splines).

Integration of functions from table entries is not as simple as might first appear. You may want to integrate over an area not represented by your table or the entries may not be equally spaced. A very useful general table integration program is given (listing 5.7.1) for just these sorts of problems. Unfortunately, general numerical procedures for the numerical integration and differentiation of functions have been omitted. Perhaps they will appear in a later volume in this series.

Finding the real roots of functions can have problems associated with the various calculation methods, but Dr. Ruckdeschel explains these with clarity presenting algorithms with the routines to show the means to the end. You may find similar problems when finding complex roots of functions; these are discussed in Chapter Seven. The optimization by steepest descent is given in the last chapter. This is a technique used to find the maxima and minima of functions by finding the gradient of the function and going "against the gradient".

The diskettes for Volume II are useful. I did discover a syntax error, but it was easily corrected. As was the case for the Volume I diskettes, you should order the diskttes you need. Each diskette corresponds to a single chapter.

And The Conclusion.....

It's about time someone got around to putting out books such as these. They are well written, and present a fairly complex subject clearly to the interested reader. Of course, the techniques cannot all be discussed in great detail, but further references are given as necessary. This set ought to be owned by every scientist and engineer who uses microcomputers (even ones that don't speak BASIC), as well as students of the physical sciences preparing for scientific work. The books will help them make the connections between mathematics and computers, or between computers and pyhsical science.

VOLUME I contains the more introductory material, but both books are useful from a utility standpoint as well as a pedagogical one. Even if you can sit down and write every routine in these books, why would you want to? They are all right here in two outstanding books that I recommend highly.

Ordering Information

The books are available from Byte Books, 70 Main Street, Peterborough, NH 03458.
The cost of Volume I $19.95 and the cost of Volume II $23.95.

The programs are available on diskette or cassette for most popular microcomputers from Dynacomp, 1427 Monroe Ave., Rochester, NY 14618.
Cassettes are $14.95 each and diskettes are $18.95 each. The three cassettes for Volume I are $39.95 and the three diskettes are $49.95. The eight cassettes for Volume II are $99.95 and the eight diskettes are $129.95.

VECTOR AND MATRIX OPERATIONS
CHOICES
SECTION IV A VECTOR OPERATIONS
SECTION IV E MATRIX SUMS AND PROD
SECTION IV F MATRIX INVERSION
SECTION IV G SOLVING LINEAR SETS OF EQUATIONS
SECTION IV I EIGENVALUES BY THE POWER METHOD
SECTION IV J MATRIX EXPONENTIATION
WHAT IS YOUR CHOICE ?

MENU FOR CHAPTER VII
FINDING THE COMPLEX ROOTS OF FUNCTIONS
CHOICES
(1) DETERMINING THE NUMBER OF ROOTS WITHIN A CIRCLE
(2) QUAT 2-D INTERVAL SEARCH
(3) NEWTON'S METHOD (COMPLEX PLANE)
(4) MUELLER'S METHOD IN ONE DIMENSION
(5) MUELLER'S METHOD IN TWO DIMENSIONS
(6) MUELLER'S METHOD (COMPLEX PLANE)
(7) SEEKING MORE ROOTS (ALLROOT)
(8) HIGH ACCURACY QUADRATIC FORMULA
(9) LIN'S METHOD FOR POLYNOMIAL ROOTS
(10) BAIRSTOW'S METHOD FOR POLYNOMIALS
WHAT IS YOUR CHOICE

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Software Reviews

Children's Carrousel, games for 2- to 6-year-olds

By Jay Lucas

Well, the keys of my Apple are sticky again, and the screen is wavy with the distortion that only kiddie goo can impart to the face of a TV.

I really don't mind, though. I've hit on another gem of a children's program that helps kids up to about six years old learn their numbers, the alphabet and other prereading and prearithmetic skills while having a good time. This software even has sections for the younger set: my two-year-old feels right at home with the games included at his level.

Though the program has solid educational worth, the "spoonful of sugar" is evident throughout each of the nine games. In this case, the "sugar" is a colorful and well-animated carousel graphic that spins in time with appropriate merry-go-round music when the child has achieved a certain level of proficiency. There is no scoring *per se*, but when the child has done well, he knows it.

InfoWorld
Software Report Card

Children's Carrousel

	Poor	Fair	Good	Excellent
Performance	☐	☐	☐	☑
Documentation	☐	☐	☐	☑
Ease of Use	☐	☐	☐	☑
Error Handling	☐	☐	☐	☑

System Requirements

- Apple II Plus
- DOS 3.3
- 48K RAM
- One disk drive
- Color monitor preferred

Price: ***$19.95***

Dynacomp, Inc.
1427 Monroe Avenue
Rochester, NY 14618
(800) 828-6772

Is it successful? Believe me, I try to check a lot of educational software, and my poor son Zachariah often turns to me sighing plaintively, "Daddy, I'm bored. Can I go watch the Dukes?" A worse insult to some software no human can proffer!

Such damnation does not resound with the Children's Carrousel; a half-hour spontaneous session is quite usual.

FEATURES: Children's Carrousel is a collection of nine different games for prereading or just-learning-to-read children. They vary in target group from two-year-olds to six-year-olds, and as you'd expect, they ask more refined actions and logic skills from the older groups. Significantly, none of the games are graded; when your child is ready for a game, he can try it without being labeled.

The first game is simply the alphabet, with the twenty-six letters placed on the screen accompanied by the alphabet song. Each letter is about an inch and a fraction high, and the game displays a wide range of colors.

The second game is also for the tots; it is called Shooting Stars, and it scatters random multicolored exploding stars across the screen, each star appearing with a sharp tone whenever any key is pressed.

Probably neither of these programs sounds like a major miracle to the typical *InfoWorld* reader, and I agree—I prefer a bit more inherent interest in a game. My little two-year-old, however, sits in front of the screen and tries to sing the alphabet song with the machine over and over, and he loves making those stars happen. *He himself* pushes the button and makes the sound and picture show up on the screen.

The next three games play with learning the concepts of shapes and colors. The first is called Same or Different. Two big colorful shapes appear on the screen side by side, over a large *S* and a large *D*. If they are the same, press the S key, hear a pleasant tone and see part of your carousel horse appear on the lower section of the screen. If you press D when you should have pressed the S key, you hear a raucous buzz.

When you correctly identify the similarity or dissimilarity of enough shapes, you accumulate sufficient parts to complete the carousel horse. This entitles you to a ride on the carousel, the colorful opening animated graphic.

The fourth game is similar to the third, but more challenging. At the top of the screen are four random objects, each with a number attached to it. A fifth object is pictured in a box. Pushing the number of the object that is the same shape as the object in the box wins your kid his horse-part. The challenge comes both from the number recognition involved and the more complicated instructions.

The fifth game is the most difficult of its type: a colored block appears on the screen and then disappears. The child must remember the color and then choose that color's number from the next display screen of four colors. This is the only game that *requires* a color TV, but your kid's enjoyment is enhanced if you use a color set for the entire program.

The next three games are for the older tykes. The first of these, game number 6, blasts random colored one-inch letters to dust when your child presses the matching key on the keyboard. Now there are no more limited numbers of keys—all letters are fair.

There is no time limit, though, so the objective is accuracy and the pleasant sound of reward, rather than the cacophonic buzz of error. On the screen the shooting is performed by an energetic sliding gun, and the scoring is again rendered in carousel-horse pieces. Now your player needs three horses to ride the carousel and win the game.

Games 7 and 8 are both in the same genre—fill in the blank with the missing letter or number within the set of three displayed. For example, in game 7, Counting Challenge, you may see the numbers 12, ,14—displayed, of course, in the bold one-inch characters. When your child enters the correct answer, 13, he gets happy music. The game deals with numbers from 1 to 20. Game 8, Alphabet Alert, operates similarly. It requires your child to supply the missing letter in an alphabetic sequence of three: Thus on completing ,*B*,*C* with the missing *A*, the child wins the round.

All three of these games held my six-year-old's interest.

The last game is simply a typewriter that displays in big, colored letters on the screen the keys that are pushed on the keyboard. The carriage Return key acts appropriately, as does the Back Arrow (rubout) key. Of course, with only eight characters per line and four lines, the threat of driving WordStar off the market with this software is unlikely.

The kids enjoy seeing their names up on the screen. Since this is really practice for children like my six-year-old, who are just starting to read and write, it seems an appropriate level at which to end off the Carrousel program.

PERFORMANCE: The program does its job well. It is a colorful, captivating set of games that really involve the children in a thinking environment. It is not the only program for kids that your household should have, but it certainly can take a place in your educational-software library. It's too bad the program does not have more fine games for each age category. You do get your money's worth with the nine that are given.

Of course, I do have a few little grudges. The first game, the alphabet recital for younger children, turns off too easily. When any key at all is hit, the alphabet stops and the menu of nine choices appears. This creates a fair amount of frustration for these youngest users, who are habitual and fanatic button pushers. In the counting game, the limit of 20 puts a bit of a tight top end on the play.

On the other hand, there are some features that were well considered. Users can exit any game at any point by pressing the Escape key. This feature means a child does not have to keep working at a game he has grown tired of; ultimately this encourages further use. Children's Carrousel has disabled the Apple's Reset key; pushing it throws you into the carousel opening graphic.

In all, the program's performance is excellent, and it exercises children's shape-, color-, letter- and number-recognition skills in an amusing manner.

EASE OF USE: The program is utter simplicity to use, and my six-year-old ran into no problems. You simply boot the disk into any DOS 3.3 Apple system with at least 48K of memory. The carousel graphic turns on, followed by the menu.

I found the carousel musical rendition of "The Band Played On" to be most prophetic; since the Reset key is disabled, you cannot turn off the program. You've got the on/off switch to rescue you, however.

ERROR HANDLING: The program is well protected from errors. I make that statement after about 20 minutes of trying to make it fail. During that time it refused to behave improperly and stubbornly kept working regardless of all irrelevant and erroneous key presses I threw at it.

I made that test because somehow, some way, *my six-year-old* got the Counting Challenge to start sprinkling beautiful colored dots across the screen when it should have been paying attention to the arithmetic. My only conclusion is that even machines tend to drift off in class sometimes.

DOCUMENTATION: While the simple mimeographed, folded single sheet won't win any printer's production awards, the content is totally sufficient. The general program and its use is described along with its educational philosophy. It suggests that parents should lead children through all the games initially so they understand the goal of each one.

SUPPORT: Though I had no need on this occasion to contact Dynacomp about the program, I have always found the staff helpful and considerate in answering questions and correcting problems.

Appropriately for a children's program, you can copy the disk readily for backup supply by using the standard Apple COPYA program. If your youngster has yet to learn the importance of original diskettes, you can remove temptation!

SUMMARY: The program is a good, solid educational package that is fun for kids. It takes advantage of all the attractive features of a computer—color, sound and interactive play.

In comparison with Kiri's Hodge Podge, Dynacomp's last educational hit program, I can say this program has a few technical improvements and more for the starting-school-age children. (Hodge Podge has more games for the younger kids.) For my family, I am glad we have both. Now if only I could get the peanut butter off the keys. . . . ■

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Review of BRIDGE MASTER
A.C.E., January, 1983

BRIDGE MASTER

This program is available on disk for $29.95 from **DYNACOMP**, 1427 Monroe Avenue., Rochester, NY 14618. It is an upgrade of their former Bridge 2.0. If you own the original, you may obtain the upgrade by sending them your original cassette or disk, together with $5 plus $2 handling. They were VERY prompt. I received the disk in what seemed less time than was required for my order to reach NY. I also sent off two pages of questions, and they were also very prompt with responses to the questions. Most of my problems with the program was due to my lack of understanding about Duplicate Bridge. I've never played Duplicate. The documentation tells you the program generates hands numbered from '0-999'. A numbered hand produces the same card distribution each time you select it. You may play the same hand as many times as desired. You may also switch positions in the same hand, and see how you may do on the other side. The documentation also tells you the '0' hand produces a random hand each time you select 0. I didn't find that to be true, and asked Dynacomp where the random hand could be found. Their response showed me the hands were actually numbered from 0.00 to 999.99. That's 100,000 hands, instead of 1000. Who needs another random hand generator? I hope I live long enough to play 100,000 hands (not likely!). The program keeps score and saves it to a disk file so you can come back to it any time. The menu lets you display the last hand played. So if you're playing the numbered hands sequentially, it's easy to pick up where you left off. There are no graphics – it's all text. With all the scoring and reading and writing to disk it seems slower than the 2.0 version it replaces. It has added some functions not covered by the 2.0. They've added pre-emptive openings, Blackwood and Stayman conventions. The program will also recognize demand bids and jump-shift responses. These are all nice improvements. Dynacomp says "sometimes it makes dumb plays!" I can second that! It makes them by your partner, as well as by your opponents, so maybe it evens out. Little things like trumping one's own high card, setting up an opponent's loser. The program makes you look like a very good Bridge player – you can win a lot. It's good practice for someone wanting to learn to play. I think I'm a pretty good player, and I'm having fun with it.

– Jim Bumpas

Did you know . . . . ?

In the March 1983 issue of SOFTLINE, the following DYNACOMP programs received first place votes: FROG MASTER, PERSONAL FINANCE SYSTEM, SUBMARINE COMMANDER and VALLEY OF THE KINGS.

BRIDGEMASTER DOES IT AGAIN!

The BOOK OF ATARI SOFTWARE (1983 edition) gave DYNACOMP's BRIDGEMASTER an "A" for overall value for the dollar. We must be doing something right: they gave PACMAN and SPACE INVADERS a "C".

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AND REVIEWS

DYNACOMP GIFT SUGGESTIONS

Many call or write DYNACOMP to purchase software not for their own use, but as presents for children, relatives and friends. In some cases the purchaser is not well acquainted with computers and may have some difficulty in choosing amongst the many products DYNACOMP offers. Therefore we have prepared the following suggestion list of popular and well accepted offerings (all program prices are for 5¼" diskettes).

The Universal Pleaser:	A well built plastic storage box containing 10 quality 5¼" diskettes: $19.95. Storage boxes sold separately for $2.95/each.
The Very Young (2-7):	CHILDREN'S CARROUSEL (Apple): $19.95 HODGE PODGE (Apple, TRS-80, Atari): $18.95 DOODLE DRAWER (Atari): $18.95
The Young Gamer:	VALLEY OF THE KINGS (Atari): $29.95 CACTUS LEAGUE BASEBALL (Atari): $19.95 SUPER TANK ATTACK (Atari): $21.95
The Older Gamer:	LEIPZIG 1813 (Atari): $33.95 WATERLOO 1815 (Atari): $33.95 CRANSTON MANOR (5¼" and 8" CP/M*): $19.95 CHESS MASTER (TRS-80, 5¼" and 8" CP/M*): $23.95 IRON CLADS (5¼" and 8" CP/M*): $29.95 STARBASE 3.2 (All Computers handled by DYNACOMP): $17.95
The Card Player:	BRIDGE MASTER (All computers handled by DYNACOMP): $29.95 EUCHRE (Atari): $21.95
The Experimenter:	EBASIC (5¼" and 8" CP/M*): $29.95 GENESIS (Apple): $49.95 DYNAFORTH (5¼" and 8" CP/M*): $74.95 TURNKEY (Atari): $19.95 ELIZA (5¼" and 8" CP/M*): $19.95
The Graphics Nut:	PLAYER MISSILE GRAPHICS TOOL KIT (Atari): $29.95 GRAFIX (TRS-80): $19.95 THE SHAPE MAGICIAN (Apple): $29.95
The Home Accountant:	PERSONAL FINANCE SYSTEM (All computers handled by DYNACOMP): $39.95 BUDGET MODEL ANALYZER (Atari): $23.95
The Market Dabbler:	MICROCOMPUTER STOCK PROGRAM (All computers handled by DYNACOMP): $59.95 STOCK MASTER/STOCK PLOT (Apple): $59.95 STOCKAID (Atari): $29.95
The Disk Collector:	DFILE (Atari, Osborne, North Star): $19.95

If you cannot decide on a particular product, give a DYNACOMP *GIFT CERTIFICATE.* You may purchase gift certificates in $5 multiples (e.g., $5, $10, $15, and so on). Each certificate is nicely printed, has the dollar amount embossed, and is valid for one year from date of purchase.

*5¼" and 8" CP/M includes Osborne, Super Brain, Altos, NEC, Morrow, North Star, Kaypro, IBM PC, Heath Zenith Z-100, Canon AS-100, Cromemco, Xerox 820, etc.

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